

APPLICATION

FOR

UNITED STATES LETTERS PATENT

TO THE ASSISTANT COMMISSIONER OF PATENTS:

BE IT KNOWN THAT WE PETER B. DERVAN AND ELDON J. BAIRD

have invented certain new and useful improvements in

**“DESIGN, SYNTHESIS AND USE OF SPECIFIC POLYAMIDE DNA-BINDING
LIGANDS”**

of which the following is a specification:

DESIGN, SYNTHESIS AND USE OF SPECIFIC
POLYAMIDE DNA-BINDING LIGANDS
(Case No. 98,016)

5 The U.S. Government has certain rights in this invention pursuant to Grant Nos. GM 26453, 27681 and 47530 awarded by the National Institute of Health.

CROSS REFERENCE TO RELATED APPLICATIONS

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10 This application is a continuation-in-part of PCT/US97/03332 filed February 20, 1997, Serial No. 08/853,522 filed May 8, 1997 and PCT/US 97/12722 filed July 21, 1997 which are continuation-in-part applications of Serial No. 08/837,524, filed April 21, 1997, Serial No. 08/607,078, filed February 26, 1996, provisional application Serial No. 60/042,022, filed April 16, 1997 and provisional application Serial No. 60/043,444, filed April 8, 1997.

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to polyamides which bind to predetermined sequences in the minor groove of double stranded DNA.

Description of the Related Art

SUP
C1
30 The design of synthetic ligands that read the information stored in the DNA double helix has been a long standing goal of chemistry. Cell-permeable small molecules which target predetermined DNA sequences are useful for the regulation of gene-expression. Oligodeoxynucleotides that recognize the major groove of double-helical DNA via triple-helix formation bind to a broad range of sequences with high affinity and specificity. Although oligonucleotides and their analogs have been shown to interfere with gene expression, the triple helix approach is limited to purine tracks and suffers from poor cellular uptake. The development of pairing rules for minor groove binding polyamides derived from N-methylpyrrole (Py) and N-methylimidazole (Im) amino acids provides another code to control sequence specificity. An Im/Py pair distinguishes G•C from C•G and both of these from A•T or T•A base pairs. Wade, W.S., Mrksich, M. & Dervan, P.B. describes the design of peptides that bind in the minor groove of DNA at 5'-(A,T)G(A,T)C(A,T)-3' sequences by a dimeric side-by-side motif. *J. Am. Chem. Soc.* **114**, 8783-8794 (1992); Mrksich, M. *et al.* describes antiparallel

side-by-side motif for sequence specific-recognition in the minor groove of DNA by the designed peptide 1-methylimidazole-2-carboxamidenetropsin. *Proc. Natl. Acad. Sci. USA* **89**, 7586-7590 (1992); Trauger, J.W., Baird, E. E. Dervan, P.B. describes the recognition of DNA by designed ligands at subnanomolar concentrations. *Nature* **382**, 559-561 (1996). A Py/Py pair specifies A•T from G•C but does not distinguish A•T from T•A. Pelton, J.G. & Wemmer, D.E. describes the structural characterization of a 2-1 distamycin A-d(CGCAAATTTGGC) complex by two-dimensional NMR. *Proc. Natl. Acad. Sci. USA* **86**, 5723-5727 (1989); White, S., Baird, E. E. & Dervan, P.B. Describes the effects of the A•T/T•A degeneracy of pyrrole-imidazole polyamide recognition in the minor groove of DNA. *Biochemistry* **35**, 12532-12537 (1996); White, S., Baird, E. E. & Dervan, P. B. describes the pairing rules for recognition in the minor groove of DNA by pyrrole-imidazole polyamides. *Chem. & Biol.* **4**, 569-578 (1997); White, S., Baird, E. E. & Dervan, P.B. describes the 5'-3' N-C orientation preference for polyamide binding in the minor groove. New methods of designing selective compounds and the resulting specific polyamide binding ligands that are designed to target an identified sequence of double stranded DNA are needed to overcome the A•T/T•A degeneracy of pyrrole-imidazole polyamide recognition.

SUMMARY OF THE INVENTION

It has been found that a new aromatic amino acid, 3-hydroxy-N-methylpyrrole (Hp) when incorporated into a polyamide and paired opposite Py, provides the means to discriminate A•T from T•A. Unexpectedly, the replacement of a single hydrogen atom on the pyrrole with a hydroxy group in a Hp/Py pair regulates the affinity and the specificity of a polyamide by an order of magnitude. Utilizing Hp together with Py and Im in polyamides to form four aromatic amino acid pairs (Im/Py, Py/Im, Hp/Py, and Py/Hp) provides a code to distinguish all four Watson-Crick base pairs in the minor groove of DNA.

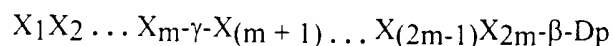
The present invention provides a method for designing specific polyamides suitable for use as DNA-binding ligands, as well as compositions comprising such polyamides, that are selective for an identified target sequence of double stranded DNA. Preferably, the designed specific polyamides are characterized by a dissociation constant of less than 1 nM, as measured by DNase I footprint titration, and greater than ten-fold selectivity for the identified target

sequence over related mismatch sequences, based on the ratio of the corresponding dissociation constants measured by DNase I footprint titrations.

The invention encompasses improved polyamides for binding to the minor groove of double stranded ("duplex") DNA. The polyamides are in the form of a hairpin comprising two groups of at least three consecutive carboxamide residues, the two groups covalently linked by an aliphatic amino acid residue, preferably γ -aminobutyric acid or 2,4 diaminobutyric acid, the consecutive carboxamide residues of the first group pairing in an antiparallel manner with the consecutive carboxamide residues of the second group in the minor groove of double stranded DNA. The improvement relates to the inclusion of a binding pair of Hp/Py carboxamides in the polyamide to bind to a T•A base pair in the minor groove of double stranded DNA or Py/Hp carboxamide binding pair in the polyamide to bind to an A•T base pair in the minor groove of double stranded DNA. The improved polyamides have at least three consecutive carboxamide pairs for binding to at least three DNA base pairs in the minor groove of a duplex DNA sequence that has at least one A•T or T•A DNA base pair, the improvement comprising selecting a Hp/Py carboxamide pair to correspond to a T•A base pair in the minor groove or a Py/Hp carboxamide pair to bind to an A•T DNA base pair in the minor groove. Preferably the binding of the carboxamide pairs to the DNA base pairs modulates the expression of a gene.

In general, the method provides specific polyamides suitable for use as DNA-binding ligands that are selective for identified target sequences of double stranded DNA having a coding strand sequence of the form 5'-WN₁N₂ . . . N_mW-3' where N is a nucleotide chosen from the group A, T, C and G, W is a nucleotide chosen from the group A and T, and with the corresponding paired antiparallel strand 3'-W'N'₁N'₂ . . . N'_mW'-5' where N' is a nucleotide chosen from the group T, A, G and C respectively to form Watson-Crick base pairs. W is a nucleotide chosen from the group T and A respectively to form Watson-Crick base pairs, and m is an integer having a value from 3 to 6 inclusive.

The preferred corresponding designed specific polyamides resulting from this invention are of the form



wherein X₁, X₂, X_m, X_(m+1), X_(2m-1), and X_{2m} are carboxamide residues forming carboxamide binding pairs X₁/X_{2m}, X₂/X_(2m-1), X_m/X_(m+1), and γ is γ -aminobutyric acid or 2,4 diaminobutyric acid and Dp is dimethylaminopropylamide,

and where

carboxamide binding pair X_1/X_{2m} corresponds to base pair $N_1 \bullet N'_1$.

carboxamide binding pair $X_2/X_{(2m-1)}$ corresponds to base pair $N_2 \bullet N'_2$.

carboxamide binding pair $X_m/X_{(m+1)}$ corresponds to base pair $N_m \bullet N'_m$.

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In general, the specific polyamide DNA-binding ligands were designed by using a method that comprises the steps of identifying the target DNA sequence 5'-WN₁N₂ . . . N_mW-3'; representing the identified sequence as 5'-Wab . . . xW-3', wherein *a* is a first nucleotide to be bound by the X₁ carboxamide residue, *b* is a second nucleotide to be bound by the X₂ carboxamide residue, and *x* is the corresponding nucleotide to be bound by the X_m carboxamide residue; defining *a* as A, G, C, or T to correspond to the first nucleotide to be bound by a carboxamide residue in the identified six base pair sequence.

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Carboxamide residues were selected sequentially as follows: Im was selected as the X₁ carboxamide residue and Py as the X_{2m} carboxamide residue if *a* was G. Py was selected as the X₁ carboxamide residue and Im as the X_{2m} carboxamide residue if *a* was C. Hp was selected as the X₁ carboxamide residue and Py as the X_{2m} carboxamide residue if *a* was T. Py was selected as the X₁ carboxamide residue and Hp as the X_{2m} carboxamide residue if *a* was A.

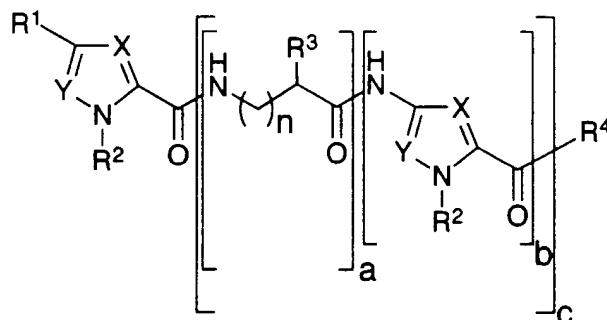
The remaining carboxamide residues were selected in the same fashion. Im was selected as the X₂ carboxamide residue and Py as the X_{2m-1} carboxamide residue if *b* was G. Py was selected as the X₂ carboxamide residue and Im as the X_{2m-1} carboxamide residue if *b* was C. Hp was selected as the X₂ carboxamide residue and Py as the X_{2m-1} carboxamide residue if *b* was T. Py was selected as the X₂ carboxamide residue and Hp as the X_{2m-1} carboxamide residue if *b* was A.

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The selection of carboxamide residues was continued through *m* iterations. In the last iteration, Im was selected as the X_m carboxamide residue and Py as the X_{m+1} carboxamide residue if *x* was G. Py was selected as the X_m carboxamide residue and Im as the X_{m+1} carboxamide residue if *x* was C. Hp was selected as the X_m carboxamide residue and Py as the X_{m+1} carboxamide residue if *x* was T. Py was selected as the X_m carboxamide residue and Hp as the X_{m+1} carboxamide residue if *x* was A.

In one preferred embodiment, the polyamide includes at least four consecutive carboxamide pairs for binding to at least four base pairs in a duplex DNA sequence. In another preferred embodiment, the polyamide includes at least five consecutive carboxamide pairs for binding to at least five base pairs in a duplex DNA sequence. In yet another preferred embodiment, the polyamide includes at least six consecutive carboxamide pairs for binding to at least six base pairs in a duplex DNA sequence. In one preferred embodiment, the improved polyamides have four carboxamide binding pairs that will distinguish A•T, T•A, C•G and G•C base pairs in the minor groove of a duplex DNA sequence. The duplex DNA sequence can be a regulatory sequence, such as a promoter sequence or an enhancer sequence, or a gene sequence, such as a coding sequence or a non-coding sequence. Preferably, the duplex DNA sequence is a promoter sequence.

More specifically, "polyamide" refers to a polymer of polyamide subunits of the formula.



where R^1 is chosen from H, NH_2 , SH, Cl, Br, F, N-acetyl, or N-formyl.

where R^2 is C_{1-100} alkyl (preferably C_{1-10} alkyl such as methyl, ethyl, isopropyl), C_{1-100} alkylamine (preferably C_{1-10} alkylamine such as ethylamine), C_{1-100} alkyldiamine (preferably C_{1-10} alkyldiamine such as N,N-dimethylpropylamine), a C_{1-100} alkylcarboxylate (preferably a C_{1-10} alkylcarboxylate such as $-CH_2COOH$), C_{1-100} alkenyl (preferably C_{1-10} alkenyl such as $CH_2CH=CH_2$), or a C_{1-100} alkynyl (preferably C_{1-10} alkynyl such as $-CH_2C\equiv CH_3$), or a $C_{1-100}L$, where L groups can be independently chosen from but is not limited to arylboronic acids, biotins, polyhistidines comprised from about 2 to 8 amino acids, haptens to which an antibody binds, solid phase supports, oligodeoxynucleotide, N-ethylnitrosourea, fluorescein, bromoacetamide, iodoacetamide, DL- α -lipoic acid, acridine,

captothesin, pyrene, mitomycin, texas red, anthracene, anthrinilic acid, avidin, DAPI, isosulfan blue, malachite green, psoralen, ethyl red, 4-(psoraen-8-yloxy)-butyrate, tartaric acid, (+)- α -tocopheral. Most preferably R^2 is H, $(CH_2)_mCH_3$, $(CH_2)_mNH_2$, $(CH_2)_mSH$, $(CH_2)_mOH$, $(CH_2)_mNR^5_2$, $(CH_2)_mOR^5$, $(CH_2)_mSR^5$, where $R^5 = (CH_2)_mCH_3$, $(CH_2)_mNH_2$, $(CH_2)_mSH$, $(CH_2)_mOH$ and m is an integer from 0 to 6.

where R^3 is chosen from H, NH_2 , OH, SH, Br, Cl, F, OMe, CH_2OH , CH_2SH , CH_2NH_2 .

where R^4 is $-NH(CH_2)_{0-100}NR^6R^7$ or $NH(CH_2)_pCO NH(CH_2)_{0-100}NR^6R^7$ or NHR^6 or $NH(CH_2)_pCONHR^6$. Where R^6 and R^7 are independently chosen from H, Cl, NO, N-acetyl, benzyl, C_{1-100} alkyl, C_{1-100} alkylamine, C_{1-100} alkyldiamine, C_{1-100} alkylcarboxylate, C_{1-100} alkenyl, a C_{1-100} alkynyl, or a $C_{1-100}L$, where L groups can be independently chosen from but is not limited to arylboronic acids, biotins, polyhistidines comprised from about 2 to 8 amino acids, haptens to which an antibody binds, solid phase supports, oligodeoxynucleotide, N-ethylnitrosourea, fluorescein, bromoacetamide, iodoacetamide, DL- α -lipoic acid, acridine, captothesin, pyrene, mitomycin, texas red, anthracene, anthrinilic acid, avidin, DAPI, an oligodeoxynucleotide, isosulfan blue, malachite green, psoralen, ethyl red, 4-(psoraen-8-yloxy)-butyrate, tartaric acid, (+)- α -tocopheral. Where p is an integer value ranging from 0 to 12. In the preferred form of the present invention R^6 and R^7 are H, and the resulting amine modified polyamide is coupled to an amine reactive molecule in order to generate a bifunction polyamide conjugate. Where the amine reactive molecule is chosen from but not limited to the following: arylboronic acids, biotins, polyhistidines comprised from about 2 to 8 amino acids, haptens to which an antibody binds, solid phase supports, an oligodeoxynucleotide, N-ethylnitrosourea, fluorescein, bromoacetamide, iodoacetamide, DL- α -lipoic acid, acridine, captothesin, pyrene, mitomycin, texas red, anthracene, anthrinilic acid, avidin, DAPI, isosulfan blue, malachite green, psoralen, ethyl red, 4-(psoraen-8-yloxy)-butyrate, tartaric acid, (+)- α -tocopheral.

where X and Y are chosen from the following, N, CH, COH, CCH_3 , CNH_2 , CCl, CF.

a is an integer chosen from values of 0 or 1

b is an integer chosen integer values ranging from 1 to 5.

c is an integer value ranging from 2 to 10.

Hereinafter, N-methylpyrrolicarboxamide may be referred to as "Py", N-methylimidazolecarboxamide may be referred to as "Im", γ -aminobutyric acid may referred to as " γ ", β -alanine may be referred to as " β ", glycine may be referred to as "G",

dimethylaminopropylamide may be referred to as "Dp", and ethylenediaminetetraacetic acid may be referred to as "EDTA".

5 The preparation and the use of polyamides for binding in the minor groove of double stranded DNA are extensively described in the art. This invention is an improvement of the existing technology that uses 3-hydroxy-N-methylpyrrole to provide carboxamide binding pairs for DNA binding polyamides.

10 The invention encompasses polyamides having γ -aminobutyric acid or a substituted γ -aminobutyric acid to form a hairpin with a member of each carboxamide pairing on each side of it. Preferably the substituted γ -aminobutyric acid is a chiral substituted γ -aminobutyric acid such as (R)-2,4-diaminobutyric acid. In addition, the polyamides may contain an aliphatic amino acid residue, preferably a β -alanine residue, in place of a Hp or Py carboxamide. The β -alanine residue is represented in formulas as β . The β -alanine residue becomes a member of a carboxamide binding pair. The invention further includes the substitution as a β/β binding pair for non-Im containing binding pair. Thus, binding pairs in addition to the Im/Py, Py/Im, Hp/Py and Py/Hp are Im/ β , β /Im, Py/ β , β /Py, Hp/ β , β /Hp, and β/β .

20 The polyamides of the invention can have additional moieties attached covalently to the polyamide. Preferably the additional moieties are attached as substituents at the amino terminus of the polyamide, the carboxy terminus of the polyamide, or at a chiral (R)-2,4-diaminobutyric acid residue. Suitable additional moieties include a detectable labeling group such as a dye, biotin or a hapten. Other suitable additional moieties are DNA reactive moieties that provide for sequence specific cleavage of the duplex DNA.

BRIEF DESCRIPTION OF THE DRAWINGS

25 Figure 1 illustrates the structure of polyamide 1, 2, and 3.

30 Figure 2 illustrates the pairing of polyamides to DNA base pairs.

Figure 3 illustrates the DNase footprint titration of compounds 2 and 3.

Figure 4 illustrates a list of the structures of representative Hp containing polyamides.

Figure 5 schematically illustrates a method for the design of eight carboxamide residue hairpin polyamide compounds suitable for recognition of 6-bp 5'-WNNNNW-3' sequences in the minor groove of double stranded DNA.

Figure 6 schematically illustrates a method for determining the position of an aromatic amino acid residue that should be replaced with a β -alanine residue in order to enhance the DNA binding properties of certain eight carboxamide residue hairpin polyamide compounds.

Figure 7 schematically illustrates a method for the design of ten carboxamide residue hairpin polyamide compounds suitable for recognition of 7-bp 5'-WNNNNNW-3' sequences in the minor groove of double stranded DNA.

Figure 8 schematically illustrates a method for determining the position of an aromatic amino acid residue that should be replaced with a β -alanine residue in order to enhance the DNA binding properties of certain ten carboxamide residue hairpin polyamide compounds.

Figure 9 schematically illustrates a method for determining the position of an additional aromatic amino acid residue that should be replaced with a β -alanine residue in order to enhance the DNA binding properties of certain ten carboxamide residue hairpin polyamide compounds.

Figure 10 schematically illustrates a method for the design of twelve carboxamide residue hairpin polyamide compounds suitable for recognition of 8-bp 5'-WNNNNW-3' sequences in the minor groove of double stranded DNA.

Figure 11 schematically illustrates a method for determining the position of an aromatic amino acid residue that should be replaced with a β -alanine residue in order to enhance the DNA binding properties of certain twelve carboxamide residue hairpin polyamide compounds.

DETAILED DESCRIPTION OF THE INVENTION

Within this application, unless otherwise stated, definitions of the terms and illustration of the techniques of this application may be found in any of several well-known references such as: Sambrook, J., *et al.*, *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Laboratory Press (1989); Goeddel, D., *ed.*, *Gene Expression Technology, Methods in Enzymology*, **185**, Academic Press, San Diego, CA (1991); "Guide to Protein Purification" in Deutscher, M.P., *ed.*, *Methods in Enzymology*, Academic Press, San Diego, CA (1989); Innis. *et al.*, *PCR Protocols: A Guide to Methods and Applications*, Academic Press, San Diego, CA (1990); Freshney, R.L., *Culture of Animal Cells: A Manual of Basic Technique*, 2nd Ed., Alan Liss, Inc. New York, NY (1987); Murray, E.J., *ed.*, *Gene Transfer and Expression Protocols*, pp. 109-128, The Humana Press Inc., Clifton, NJ and Lewin, B., *Genes VI*, Oxford University Press, New York (1997).

For the purposes of this application, a *promoter* is a regulatory sequence of DNA that is involved in the binding of RNA polymerase to initiate transcription of a gene. A *gene* is a segment of DNA involved in producing a peptide, polypeptide or protein, including the coding region, non-coding regions preceding ("leader") and following ("trailer") the coding region, as well as intervening non-coding sequences ("introns") between individual coding segments ("exons"). Coding refers to the representation of amino acids, start and stop signals in a three base "triplet" code. Promoters are often upstream ("5 to") the transcription initiation site of the corresponding gene. Other regulatory sequences of DNA in addition to promoters are known, including sequences involved with the binding of transcription factors, including response elements that are the DNA sequences bound by inducible factors. Enhancers comprise yet another group of regulatory sequences of DNA that can increase the utilization of promoters, and can function in either orientation (5'-3' or 3'-5') and in any location (upstream or downstream) relative to the promoter. Preferably, the regulatory sequence has a positive activity, i.e., binding of an endogenous ligand (e.g. a transcription factor) to the regulatory sequence increases transcription, thereby resulting in increased expression of the corresponding target gene. In such a case, interference with transcription by binding a polyamide to a regulatory sequence would reduce or abolish expression of a gene.

The promoter may also include or be adjacent to a regulatory sequence known in the art as a *silencer*. A silencer sequence generally has a negative regulatory effect on expression of the gene. In such a case, expression of a gene may be increased directly by using a polyamide to prevent binding of a factor to a silencer regulatory sequence or indirectly, by using a polyamide to block transcription of a factor to a silencer regulatory sequence.

It is to be understood that the polyamides of this invention bind to double stranded DNA in a sequence specific manner. The function of a segment of DNA of a given sequence, such as 5'-TATAAA-3', depends on its position relative to other functional regions in the DNA sequence. In this case, if the sequence 5'-TATAAA-3' on the coding strand of DNA is positioned about 30 base pairs upstream of the transcription start site, the sequence forms part of the promoter region (Lewin, *Genes VI*, pp. 831-835). On the other hand, if the sequence 5'-TATAAA-3' is downstream of the transcription start site in a coding region and in proper

register with the reading frame, the sequence encodes the tyrosyl and lysyl amino acid residues (Lewin, *Genes VI*, pp. 213-215).

5 While not being held to one hypothesis, it is believed that the binding of the polyamides of this invention modulate gene expression by altering the binding of DNA binding proteins, such as RNA polymerase, transcription factors, TBF, TFIIB and other proteins. The effect on gene expression of polyamide binding to a segment of double stranded DNA is believed to be related to the function, e.g., promoter, of that segment of DNA.

10 It is to be understood by one skilled in the art that the improved polyamides of the present invention may bind to any of the above-described DNA sequences or any other sequence having a desired effect upon expression of a gene. In addition, U.S. Patent No. 5,578,444 describes numerous promoter targeting sequences from which base pair sequences for targeting an improved polyamide of the present invention may be identified.

It is generally understood by those skilled in the art that the basic structure of DNA in a living cell includes both *major* and a *minor groove*. For the purposes of describing the present invention, the *minor groove* is the narrow groove of DNA as illustrated in common molecular biology references such as Lewin, B., *Genes VI*, Oxford University Press, New York (1997).

20 To affect gene expression in a cell, which may include causing an increase or a decrease in gene expression, a effective quantity of one or more polyamide is contacted with the cell and internalized by the cell. The cell may be contacted *in vivo* or *in vitro*. Effective extracellular concentrations of polyamides that can modulate gene expression range from about 10 nanomolar to about 1 micromolar. Gottesfeld, J.M., *et al.*, *Nature* **387** 202-205 (1997). To determine effective amounts and concentrations of polyamides *in vitro*, a suitable number of cells is plated on tissue culture plates and various quantities of one or more polyamide are added to separate wells. Gene expression following exposure to a polyamide can be monitored in the cells or medium by detecting the amount of the protein gene product present as determined by various techniques utilizing specific antibodies, including ELISA and western blot. Alternatively, gene expression following exposure to a polyamide can be monitored by detecting the amount of messenger RNA present as determined by various techniques, including northern blot and RT-PCR.

Similarly, to determine effective amounts and concentrations of polyamides for *in vivo* administration, a sample of body tissue or fluid, such as plasma, blood, urine, cerebrospinal fluid, saliva, or biopsy of skin, muscle, liver, brain or other appropriate tissue source is analyzed.

5 Gene expression following exposure to a polyamide can be monitored by detecting the amount of the protein gene product present as determined by various techniques utilizing specific antibodies, including ELISA and western blot. Alternatively, gene expression following exposure to a polyamide can be monitored by the detecting the amount of messenger RNA present as determined by various techniques, including northern blot and RT-PCR.

10 The polyamides of this invention may be formulated into diagnostic and therapeutic compositions for *in vivo* or *in vitro* use. Representative methods of formulation may be found in *Remington: The Science and Practice of Pharmacy*, 19th ed., Mack Publishing Co., Easton, PA (1995).

For *in vivo* use, the polyamides may be incorporated into a physiologically acceptable pharmaceutical composition that is administered to a patient in need of treatment or an animal for medical or research purposes. The polyamide composition comprises pharmaceutically acceptable carriers, excipients, adjuvants, stabilizers, and vehicles. The composition may be in solid, liquid, gel, or aerosol form. The polyamide composition of the present invention may be administered in various dosage forms orally, parentally, by inhalation spray, rectally, or topically. The term parenteral as used herein includes, subcutaneous, intravenous, intramuscular, intrasternal, infusion techniques or intraperitoneally.

25 The selection of the precise concentration, composition, and delivery regimen is influenced by, *inter alia*, the specific pharmacological properties of the particular selected compound, the intended use, the nature and severity of the condition being treated or diagnosed, the age, weight, gender, physical condition and mental acuity of the intended recipient as well as the route of administration. Such considerations are within the purview of the skilled artisan.
30 Thus, the dosage regimen may vary widely, but can be determined routinely using standard methods.

Polyamides of the present invention are also useful for detecting the presence of double stranded DNA of a specific sequence for diagnostic or preparative purposes. The sample containing the double stranded DNA can be contacted by polyamide linked to a solid substrate, thereby isolating DNA comprising a desired sequence. Alternatively, polyamides linked to a suitable detectable marker, such as biotin, a hapten, a radioisotope or a dye molecule, can be contacted by a sample containing double stranded DNA.

The design of bifunctional sequence specific DNA binding molecules requires the integration of two separate entities: recognition and functional activity. Polyamides that specifically bind with subnanomolar affinity to the minor groove of a predetermined sequence of double stranded DNA are linked to a functional molecule, providing the corresponding bifunctional conjugates useful in molecular biology, genomic sequencing, and human medicine. Polyamides of this invention can be conjugated to a variety of functional molecules, which can be independently chosen from but is not limited to arylboronic acids, biotins, polyhistidines comprised from about 2 to 8 amino acids, haptens to which an antibody binds, solid phase supports, oligodeoxynucleotides, N-ethylnitrosourea, fluorescein, bromoacetamide, iodoacetamide, DL- α -lipoic acid, acridine, captothesin, pyrene, mitomycin, texas red, anthracene, anthranilic acid, avidin, DAPI, isosulfan blue, malachite green, psoralen, ethyl red, 4-(psoraen-8-yloxy)-butyrate, tartaric acid, (+)- α -tocopheral, psoralen, EDTA, methidium, acridine, Ni(II)•Gly-Gly-His, TO, Dansyl, pyrene, N-bromoacetamide, and gold particles. Such bifunctional polyamides are useful for DNA affinity capture, covalent DNA modification, oxidative DNA cleavage, and DNA photocleavage. Such bifunctional polyamides are useful for DNA detection by providing a polyamide linked to a detectable label. Detailed instructions for synthesis of such bifunctional polyamides can be found in copending U.S. provisional application 60/043,444, the teachings of which are incorporated by reference.

DNA complexed to a labeled polyamide can then be determined using the appropriate detection system as is well known to one skilled in the art. For example, DNA associated with a polyamide linked to biotin can be detected by a streptavidin / alkaline phosphatase system.

The present invention also describes a diagnostic system, preferably in kit form, for assaying for the presence of the double stranded DNA sequence bound by the polyamide of this invention in a body sample, such brain tissue, cell suspensions or tissue sections, or body fluid

samples such as CSF, blood, plasma or serum, where it is desirable to detect the presence, and preferably the amount, of the double stranded DNA sequence bound by the polyamide in the sample according to the diagnostic methods described herein.

5 The diagnostic system includes, in an amount sufficient to perform at least one assay, a specific polyamide as a separately packaged reagent. Instructions for use of the packaged reagent(s) are also typically included. As used herein, the term "package" refers to a solid matrix or material such as glass, plastic (e.g., polyethylene, polypropylene or polycarbonate), paper, foil and the like capable of holding within fixed limits a polyamide of the present
10 invention. Thus, for example, a package can be a glass vial used to contain milligram quantities of a contemplated polyamide or it can be a microliter plate well to which microgram quantities of a contemplated polyamide have been operatively affixed, i.e., linked so as to be capable of being bound by the target DNA sequence. "Instructions for use" typically include a tangible expression describing the reagent concentration or at least one assay method parameter such as the relative amounts of reagent and sample to be admixed, maintenance time periods for reagent or sample admixtures, temperature, buffer conditions and the like. A diagnostic system of the present invention preferably also includes a detectable label and a detecting or indicating means capable of signaling the binding of the contemplated polyamide of the present invention to the target DNA sequence. As noted above, numerous detectable labels, such as biotin, and detecting or indicating means, such as enzyme-linked (direct or indirect) streptavidin, are well known in the art.

As used herein, "subnanomolar affinity" means binding that is characterized by a dissociation constant, K_d , of less than 1 nM, as measured by DNase I footprint titration.
25 Preferably, polyamides of the present invention are characterized by subnanomolar binding affinity for the identified target DNA sequence. As used herein, the "selectivity" of the binding of a polyamide to a DNA sequence is the ratio of the dissociation constant, K_d , as measured by DNase I footprint titration of binding the polyamide to a mismatch DNA sequence divided by the corresponding dissociation constant of the binding of the polyamide to the identified target
30 DNA sequence. Preferably, polyamides of the present invention are characterized by a selectivity of 5 or greater, more preferably a selectivity of greater than 10.

The exemplary polyamide that illustrates the compositions and methods of the present invention is polyamide 3 of Figure 1, ImImHpPy- γ -ImPyPyPy- β -Dp. This polyamide was designed according to the method of the present invention to target the identified sequence 5'-WGGTCW-3'. See Table 5, below, Sequence No. 36 and the corresponding sequence of carboxamide binding pairs. Polyamide 3 binds an identified target sequence 5'-TGGTCA-3' with a dissociation constant, as measured by DNase I footprint titration, of 0.48 nM, i.e., with subnanomolar affinity as defined herein (see Table 1, below). The polyamide binds to the mismatch sequence 5'-TGGACA-3' with a dissociation constant of 37 nM, yielding a selectivity, as defined herein, of 77 (Table 1).

Figure 1 shows representative structures of polyamides. ImImPyPy- γ -ImPyPyPy- β -Dp (1), ImImPyPy- γ -ImHpPyPy- β -Dp (2), and ImImHpPy- γ -ImPyPyPy- β -Dp (3). (Hp = 3-hydroxy-N-methylpyrrole, Im = N-methylimidazole, Py = N-methylpyrrole, β = β -alanine, γ = γ -aminobutyric acid, Dp = Dimethylaminopropylamide). Polyamides were synthesized by solid phase methods using Boc-protected 3-methoxypyrrole, imidazole, and pyrrole aromatic amino acids, cleaved from the support by aminolysis, deprotected with sodium thiophenoxide, and purified by reversed phase HPLC. Baird, E. E. & Dervan, P. B. describes the solid phase synthesis of polyamides containing imidazole and pyrrole amino acids. *J. Am. Chem. Soc.* **118**, 6141-6146 (1996); also see PCT US 97/003332. The identity and purity of the polyamides were verified by ^1H NMR, analytical HPLC, and matrix-assisted laser-desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS-monoisotopic): 1 1223.6 (1223.6 calculated), 2 1239.6 (1239.6 calculated); 3 1239.6 (1239.6 calculated).

Figure 2 illustrates binding models for polyamides 1-3 in complex with 5'-TGGTCA-3' and 5'-TGGACA-3' (A•T and T•A in fourth position highlighted). Filled and unfilled circles represent imidazole and pyrrole rings respectively; circles containing an H represent 3-hydroxypyrrole, the curved line connecting the polyamide subunits represents γ -aminobutyric acid, the diamond represents β -alanine, and the + represents the positively charged dimethylaminopropylamide tail group.

Figure 3 shows quantitative DNase I footprint titration experiments with polyamides 2 and 3 on the 3' ^{32}P labeled 250-bp pJK6 *EcoRI*/*PvuII* restriction fragment. Lane 1, intact DNA; lanes 2-11 DNase I digestion products in the presence of 100, 50, 20, 10, 5, 2, 1, 0.5, 0.2, 0.1 nM

polyamide, respectively; lane 12, DNase I digestion products in the absence of polyamide; lane 13, adenine-specific chemical sequencing. Iverson, B. L. & Dervan, P. B. describes an adenine-specific DNA chemical sequencing reaction. *Methods Enzymol.* **15**, 7823-7830 (1987). All reactions were done in a total volume of 400 μ L. A polyamide stock solution or H₂O was added to an assay buffer containing radiolabeled restriction fragment, with the final solution conditions of 10 mM Tris-HCl, 10 mM KCl, 10 mM MgCl₂, 5 mM CaCl₂, pH 7.0. Solutions were allowed to equilibrate for 4-12 h at 22 °C before initiation of footprinting reactions. Footprinting reactions, separation of cleavage products, and data analysis were carried out as described. White, S., Baird, E. E. & Dervan, P. B. Effects of the A•T/T•A degeneracy of pyrrole-imidazole polyamide recognition in the minor groove of DNA. *Biochemistry* **35**, 12532-12537 (1996).

Figure 4 shows the structure and equilibrium dissociation constant for numerous compounds of the present invention. Polyamides are shown in complex with their respective match site. Filled and unfilled circles represent imidazole (Im) and pyrrole (Py) rings, respectively; circles containing an H represent 3-hydroxypyrrole (Hp), the curved line connecting the polyamide subunits represents γ -aminobutyric acid (γ), the diamond represents β -alanine (β), and the + represents the positively charged dimethylaminopropylamide tail group (Dp). The equilibrium dissociation constants are the average values obtained from three DNase I footprint titration experiments. The standard deviation for each set is less than 15% of the reported number. Assays were carried out in the presence of 10 mM Tris•HCl, 10 mM KCl, 10 mM MgCl₂, and 5 mM CaCl₂ at pH 7.0 and 22°C.

Four-ring polyamide subunits, covalently coupled to form eight-ring hairpin structures, bind specifically to 6-bp target sequences at subnanomolar concentrations. Trauger, J.W., Baird, E. E. & Dervan, P.B. describe the recognition of DNA by designed ligands at subnanomolar concentrations. *Nature* **382**, 559-561 (1996); Swalley, S. E., Baird, E. E. & Dervan, P. B. describe the discrimination of 5'-GGGG-3', 5'-GCGC-3', and 5'-GGCC-3' sequences in the minor groove of DNA by eight-ring hairpin polyamides. *J. Am. Chem. Soc.* **119**, 6953-6961 (1997). The DNA-binding affinities of three eight-ring hairpin polyamides shown in Figure 1 as compound 1, 2, and 3 containing pairings of Im/Py, Py/Im opposite G•C, C•G and either Py/Py, Hp/Py, or Py/Hp at a common single point opposite T•A and A•T has been determined. Equilibrium dissociation constants (K_d) for ImImPyPy- γ -ImPyPyPy- β -Dp 1, ImImPyPy- γ -ImHpPyPy- β -Dp 2, ImImHpPy- γ -ImPyPyPy- β -Dp 3 of Figure 1 are shown in Table 1. Brenowitz, M., Senear, D. F., Shea, M. A. & Ackers, G. K. describe a quantitative DNase footprint titration method for studying protein-DNA interactions. *Methods Enzymol.* **130**, 132-

181 (1986); The K_d values were determined by quantitative DNase I footprint titration experiments: on a 3' ^{32}P -labeled 250-bp DNA fragment containing the target sites, 5'-TGGACA-3' and 5'-TGGTCA-3' which differ by a single A•T base pair in the fourth position. The DNase footprint gels are shown in Figure 3.

5

TABLE 1 Equilibrium dissociation constants*				
Polyamide†	5'-TGGTCA-3'	5'-TGGACA-3'	K_{rel}^{\ddagger}	
1 Py/Py			2.0	
	$K_d = 0.077 \text{ nM}$	$K_d = 0.15 \text{ nM}$		
2 Py/Hp			0.06	
	$K_d = 15 \text{ nM}$	$K_d = 0.83 \text{ nM}$		
3 Hp/Py			77	
	$K_d = 0.48 \text{ nM}$	$K_d = 37 \text{ nM}$		

*The reported dissociation constants are the average values obtained from three DNase I footprint titration experiments. The standard deviation for each data set is less than 15% of the reported number. Assays were carried out in the presence of 10 mM Tris•HCl, 10 mM KCl, 10 mM MgCl₂, and 5 mM CaCl₂ at pH 7.0 and 22 °C.

†Ring pairing opposite T•A and A•T in the fourth position.

‡Calculated as $K_d(5'-TGGACA-3') / K_d(5'-TGGTCA-3')$.

Based on the pairing rules for polyamide-DNA complexes both of these sequences are a match for control polyamide 1 which places a Py/Py pairing opposite A•T and T•A at both sites. It was determined that polyamide 1 (Py/Py) binds to 5'-TGGTCA-3' and 5'-TGGACA-3' within a factor of 2 ($K_d = 0.077$ or 0.15 nM respectively). In contrast, polyamide 2 (Py/Hp) binds to 5'-TGGTCA-3' and 5'-TGGACA-3' with dissociation constants which differ by a factor of 18 ($K_d = 15 \text{ nM}$ and 0.83 nM respectively). By reversing the pairing in polyamide 3 (Hp/Py) the dissociation constants differ again in the opposite direction by a factor of 77 ($K_d = 0.48 \text{ nM}$ and 37 nM respectively). Control experiments performed on separate DNA fragments reveal that neither a 5'-TGGGCA-3' or a 5'-TGGCCA-3' site is bound by polyamide 2 or 3 at concentrations $\leq 100 \text{ nM}$, indicating that the Hp/Py and Py/Hp ring pairings do not bind opposite G•C or C•G.

The specificity of polyamides 2 and 3 for sites which differ by a single A•T/T•A base pair results from small chemical changes. Replacing the Py/Py pair in 1 with a Py/Hp pairing as in 2, a single substitution of C3-OH for C3-H, destabilizes interaction with 5'-TGGTCA-3' by 191-fold, a free energy difference of $3.1 \text{ kcal mol}^{-1}$. Interaction of 2 with 5'-TGGACA-3' is destabilized only 6-fold relative to 1, a free energy difference of $1.1 \text{ kcal mol}^{-1}$. Similarly,

replacing the Py/Py pair in **1** with Hp/Py as in **3** destabilizes interaction with 5'-TGGACA-3' by 252-fold, a free energy difference of 3.2 kcal mol⁻¹. Interaction of **3** with 5'TGGICA-3' is destabilized only 6-fold relative to **1**, a free energy difference of 1.0 kcal mol⁻¹.

The polyamides of this invention provide for coded targeting of predetermined DNA sequences with affinity and specificity comparable to sequence-specific DNA binding proteins. Hp, Im, and Py polyamides complete the minor groove recognition code using three aromatic amino acids which combine to form four ring pairings (Im/Py, Py/Im, Hp/Py, and Py/Hp) which complement the four Watson-Crick base pairs, as shown in TABLE 2. There are a possible 240 four base pair sequences which contain at least 1 A•T or T•A base pair and therefore can advantageously use an Hp/Py, or Py/Hp carboxamide binding. Polyamides binding to any of these sequences can be designed in accordance with the code of TABLE 2.

TABLE 2 Pairing code for minor groove recognition*

Pair	G•C	C•G	T•A	A•T
Im/Py	+	-	-	-
Py/Im	-	+	-	-
Hp/Py	-	-	+	-
Py/Hp	-	-	-	+

* favored (+), disfavored (-)

For certain G•C rich sequences the affinity of polyamide•DNA complexes may be enhanced by substitution of an Im/β pair for Im/Py at G•C and β/Im for Py/Im at C•G. At A•T and T•A base pairs, either a Py/β, β/Py, Hp/β, β/Hp, and β/β may be used. The alternate aliphatic/aromatic amino acid pairing code is described in Table 3.

TABLE 3 Aliphatic/Aromatic substitution for ring pairings*

Pair	Substitution
Im/Py	Im/β
Py/Im	β/Im
Hp/Py	Py/β, β/Py, Hp/β, β/β
Py/Hp	Py/β, β/Py, β/Hp, β/β

U. S. Patent 5,578,444 describes numerous promoter region targeting sequences from which base pair sequences for targeting a polyamide can be identified.

PCT U.S. 97/003332 describes methods for synthesis of polyamides which are suitable for preparing polyamides of this invention. The use of β -alanine in place of a pyrrole amino acid in the synthetic methods provides aromatic/aliphatic pairing (Im/ β , β /Im, Hp/ β , β /Hp, Py/ β , and β /Py) and aliphatic/aliphatic pairing (β / β) substitution. The use of γ -aminobutyric acid, or a substituted γ -aminobutyric acid such as (R)-2,4 diaminobutyric acid, provides for preferred hairpin turns. The following examples illustrate the synthesis of polyamides of the present invention.

The process of designing a preferred polyamide molecule $X_1X_2X_3X_4\text{-}\gamma\text{-}X_5X_6X_7X_8$ comprising eight aromatic amino acid residues of this invention is shown schematically in Figure 5. The polyamide design process provides a method for designing an eight carboxamide residue molecule comprising four carboxamide binding pairs for detection and binding of a target six base pair 5'-WNNNNW-3' sequence in the minor groove of double stranded DNA. The design process identifies an appropriate polyamide ligand for recognition of a predetermined 6-bp, 5'-WNNNNW-3' sequence with subnanomolar affinity and >10-fold specificity versus mismatch sites. Trauger, J.W., Baird, E. E. Dervan, P.B. describes the recognition of DNA by designed ligands at subnanomolar concentrations. *Nature* **382**, 559-561 (1996).

In order to prepare a polyamide molecule specific for an identified six base pair sequence of double stranded DNA, a user starts the 8-ring polyamide design process that implements the minor groove recognition pairing code summarized in Table 2 above. In the design process a 5'-WNNNNW-3' sequence was identified. In a preferred embodiment, the identified sequence was located within a gene promoter. U. S. Patent 5,578,444 describes numerous promoter region targeting sequences from which target six base pair sequences for targeting a polyamide can be identified. The identified sequence was then defined as 5'-W**abcd**W-3' in a stepwise process wherein **a**, **b**, **c**, and **d**, were sequentially and independently defined as A, G, C, or T. The structure of the polyamide molecule was then correspondingly defined by sequentially choosing antiparallel carboxamide binding pairs according to the minor groove pairing code summarized in Table 2 above. Thus, if **a** was G, then X_1 was defined as Im, and X_8 was defined as Py. If **a** was C, then X_1 was defined as Py, and X_8 was defined as Im. If **a** was T, then X_1 was defined

as Hp, and X8 was defined as Py. If **a** was A, then X1 was defined as Py, and X8 was defined as Hp.

Similarly, **b** was defined as A, G, C, or T and corresponding carboxamide binding pairs were defined. According to the same rules, if **b** was G, then X2 was defined as Im, and X7 was defined as Py. If **b** was C, then X2 was defined as Py, and X7 was defined as Im. Likewise, if **b** was T, then X2 was defined as Hp, and X7 was defined as Py. If **b** was A, then X2 was defined as Py, and X7 was defined as Hp.

The next step was to define **c** as A, G, C, or T and then define corresponding carboxamide binding pairs. Following the same rules, if **c** was G, then X3 was defined as Im, and X6 was defined as Py. If **c** was C, then X3 was defined as Py, and X6 was defined as Im. Similarly, if **c** was T, then X3 was defined as Hp, and X6 was defined as Py. If **c** was A, then X3 was defined as Py, and X6 was defined as Hp. Lastly, **d** was defined as A, G, C, or T and the last corresponding carboxamide binding pair was defined. According to above rules, if **d** was G, then X4 was defined as Im, and X5 was defined as Py. If **d** was C, then X4 was defined as Py, and X5 was defined as Im. If **d** was T, then X4 was defined as Hp, and X5 was defined as Py. If **d** was A, then X4 was defined as Py, and X5 was defined as Hp.

With all eight carboxamide residues that participate in binding pairs now defined, the designed polyamide X1X2X3X4-γ-X5X6X7X8 suitable for binding to the identified sequence was synthesized using known techniques. Baird, E. E. & Dervan, P. B. describes the solid phase synthesis of polyamides containing imidazole and pyrrole amino acids. *J. Am. Chem. Soc.* **118**, 6141-6146 (1996); also see PCT US 97/003332.

The binding affinity of the synthesized polyamide to the identified sequence was determined using a quantitative DNase footprint titration method for studying protein-DNA interactions described by Brenowitz, M., Senear, D. F., Shea, M. A. & Ackers, G. K., *Methods Enzymol.* **130**, 132-181 (1986). If the affinity of the synthesized polyamide at the target site was not subnanomolar affinity then adding a β-alanine (process A) was considered in order to optimize the exact positions of the binding pairs of aromatic amino acids. If the affinity of the said polyamide at said target site was subnanomolar affinity then the sequence specificity of the polyamide versus mismatch sequences was determined. If the specificity versus mismatch sites

was not > 10-fold specificity then adding a β -alanine (process A schematically shown in Figure 6) was considered, in order to optimize the positions of the aromatic amino acids in relationship to the base pairs in the minor groove. Specificity of the polyamide molecule for the target identified sequence versus mismatch sequence sites of greater than 10-fold was considered a successful result of design process.

The 256 polyamide molecules comprising four carboxamide binding pairs that were designed using this method are useful for binding to the 256 target 5'-NNNN-3' core sequences, and are listed in Tables 4-11. A corresponding polyamide molecule was designed for each DNA sequence (1-240) and (G1-G16) using the process outlined above and shown schematically in Figure 5.

If the synthesized polyamide molecule did not bind to the target identified sequence with subnanomolar affinity or if the synthesized polyamide molecule did not exhibit a specificity for the target identified sequence versus mismatch sequence sites of greater than 10-fold, the option of substituting an aliphatic amino acid residues for one of the carboxamide residues was considered. The preferred aliphatic amino acid residue is β -alanine. At least one aliphatic amino acid residue such as a β -alanine residue provided some flexibility to the central portion of the polyamide molecule, acting as a "spring" to permit optimization of the hydrogen bonding between the carboxamide binding pairs and the nucleotide bases of the double stranded DNA.

In general, it was not found to be advantageous to replace either member of the terminal carboxamide binding pair, X₁/X₈, with β -alanine. Similarly, β -alanine was not substituted for members of the binding pair, X₄/X₅, adjacent to the γ hairpin residue. β -alanine residues were not substituted for N-methylimidazole residues. The use of β -alanine in place of a pyrrole or 3-hydroxypyrrole amino acid residue provides aromatic/aliphatic pairing (Im/ β , β /Im, Hp/ β , β /Hp, Py/ β , and β /Py) and aliphatic/aliphatic pairing (β / β) substitution.

The method for selecting which pyrrole amino acid to substitute with β -alanine is schematically illustrated in Figure 6. Selective placement of an aliphatic β -alanine (β) residue paired with either a pyrrole (Py), 3-hydroxypyrrole (Hp), or imidazole (Im) aromatic amino acid or another β -alanine residue is found to compensate for sequence composition effects to improve

recognition and binding of the minor groove of DNA by pyrrole-imidazole polyamides of the present invention. If an all-ring polyamide has been found to have an affinity which is not subnanomolar, or a specificity versus mismatch sequences which is less than 10-fold it may be caused by DNA sequence-composition effects which can be reduced by replacement of an aromatic amino acid with an aliphatic β -alanine residue. In a polyamide molecule that comprises four binding pairs it is only beneficial to place β -alanine in positions X₂, X₃, X₆, and X₇. No more than two β -alanine residues may be placed within a single hairpin structure. No more than a single β -residue may be placed within each individual polyamide subunit, e.g., if X₂ is replaced with β -alanine, then X₃ cannot be replaced.

These rules and others were implemented in the method schematically illustrated in Figure 6. This process is suitable for the refinement of the design polyamide comprising four binding pairs that has been designed by the method illustrated in Figure 5, but which lacks subnanomolar affinity or greater than 10-fold specificity at the identified target DNA sequence. As in the basic design method, the designed polyamides are synthesized and the affinity and specificity of binding to the target DNA were determined.

For a given polyamide molecule X₁X₂X₃X₄- γ -X₅X₆X₇X₈ there are five possible outcomes for the process of substituting a β -alanine residue for an aromatic amino acid residue. First, there may be no position at which it is possible to add a β -alanine residue; in such case, a better binding affinity or selectivity can be sought in the design and synthesis of a polyamide with five or six carboxamide binding pairs, described below. Second, the process may result in a derivative which contains a single β -alanine substitution (such derivatives are numbered according to the parent numbering scheme such that a single β -derivative of compound 5 would be called 5 β), which is sufficient to produce subnanomolar binding affinity and >10-fold specificity, and at which point the process is deemed complete.

Third, the process of Figure 5 may result in a polyamide which contains a single β -alanine substitution which is not sufficient to produce subnanomolar binding affinity and >10-fold specificity, but where there are no additional positions in which it is possible to substitute a β -alanine residue, and in such a case a polyamide with five or six carboxamide binding pairs, should be designed and synthesized, as described below. Fourth, the process of Figure 5 may

result in a polyamide that contains a single β -alanine substitution that is not sufficient to produce subnanomolar binding affinity and >10 -fold specificity, but where there is an additional position for β -alanine substitution that does produce a polyamide with the criterion level of affinity and selectivity and therefore the design process is deemed complete. Polyamides that were designed by the process that produces polyamide molecules that contain two β -alanine residues are labeled $\beta 2$ in Tables 12-19.

A fifth possibility is that substitution at a second position by the method illustrated in Figure 6 with a second β -alanine residue is not sufficient to produce a polyamide having the subnanomolar binding affinity and >10 -fold specificity, and a polyamide with five or six carboxamide binding pairs, should be designed and synthesized, as described below. Tables 12-19 list polyamides corresponding to sequences 1-240 and G1-G16 which contain either one or two β -alanine residues.

TABLE 4: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WGWNNW-3'

	DNA sequence	aromatic amino acid sequence
1)	5'-W G T T T W-3'	ImHpHpHp- γ -PyPyPyPy
2)	5'-W G T T A W-3'	ImHpHpPy- γ -HpPyPyPy
3)	5'-W G T T G W-3'	ImHpHpIm- γ -PyPyPyPy
4)	5'-W G T T C W-3'	ImHpHpPy- γ -ImPyPyPy
5)	5'-W G T A T W-3'	ImHpPyHp- γ -PyHpPyPy
6)	5'-W G T A A W-3'	ImHpPyPy- γ -HpHpPyPy
7)	5'-W G T A G W-3'	ImHpPyIm- γ -PyHpPyPy
8)	5'-W G T A C W-3'	ImHpPyPy- γ -ImHpPyPy
9)	5'-W G T G T W-3'	ImHpImHp- γ -PyPyPyPy
10)	5'-W G T G A W-3'	ImHpImPy- γ -HpPyPyPy
11)	5'-W G T G G W-3'	ImHpImIm- γ -PyPyPyPy
12)	5'-W G T G C W-3'	ImHpImPy- γ -ImPyPyPy
13)	5'-W G T C T W-3'	ImHpPyHp- γ -PyImPyPy
14)	5'-W G T C A W-3'	ImHpPyPy- γ -HpImPyPy
15)	5'-W G T C G W-3'	ImHpPyIm- γ -PyImPyPy
16)	5'-W G T C C W-3'	ImHpPyPy- γ -ImImPyPy
17)	5'-W G A T T W-3'	ImPyHpHp- γ -PyPyHpPy
18)	5'-W G A T A W-3'	ImPyHpPy- γ -HpPyHpPy
19)	5'-W G A T G W-3'	ImPyHpIm- γ -PyPyHpPy
20)	5'-W G A T C W-3'	ImPyHpPy- γ -ImPyHpPy
21)	5'-W G A A T W-3'	ImPyPyHp- γ -PyHpHpPy
22)	5'-W G A A A W-3'	ImPyPyPy- γ -HpHpHpPy
23)	5'-W G A A G W-3'	ImPyPyIm- γ -PyHpHpPy
24)	5'-W G A A C W-3'	ImPyPyPy- γ -ImHpHpPy
25)	5'-W G A G T W-3'	ImPyImHp- γ -PyPyHpPy
26)	5'-W G A G A W-3'	ImPyImPy- γ -HpPyHpPy
27)	5'-W G A G G W-3'	ImPyImIm- γ -PyPyHpPy
28)	5'-W G A G C W-3'	ImPyImPy- γ -ImPyHpPy
29)	5'-W G A C T W-3'	ImPyPyHp- γ -PyImHpPy
30)	5'-W G A C A W-3'	ImPyPyPy- γ -HpImHpPy
31)	5'-W G A C G W-3'	ImPyPyIm- γ -PyImHpPy
32)	5'-W G A C C W-3'	ImPyPyPy- γ -ImImHpPy

TABLE 5: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WGSNNW-3'

	DNA sequence	aromatic amino acid sequence
5	33) 5'-W G G T T W-3'	ImImHpHp-γ-PyPyPyPy
	34) 5'-W G G T A W-3'	ImImHpPy-γ-HpPyPyPy
	35) 5'-W G G T G W-3'	ImImHpIm-γ-PyPyPyPy
	36) 5'-W G G T C W-3'	ImImHpPy-γ-ImPyPyPy
	37) 5'-W G G A T W-3'	ImImPyHp-γ-PyHpPyPy
	38) 5'-W G G A A W-3'	ImImPyPy-γ-HpHpPyPy
10	39) 5'-W G G A G W-3'	ImImPyIm-γ-PyHpPyPy
	40) 5'-W G G A C W-3'	ImImPyPy-γ-ImHpPyPy
	41) 5'-W G G G T W-3'	ImImImHp-γ-PyPyPyPy
	42) 5'-W G G G A W-3'	ImImImPy-γ-HpPyPyPy
	43) 5'-W G G C T W-3'	ImImPyHp-γ-PyImPyPy
	44) 5'-W G G C A W-3'	ImImPyPy-γ-HpImPyPy
	45) 5'-W G C T T W-3'	ImPyHpHp-γ-PyPyImPy
	46) 5'-W G C T A W-3'	ImPyHpPy-γ-HpPyImPy
	47) 5'-W G C T G W-3'	ImPyHpIm-γ-PyPyImPy
	48) 5'-W G C T C W-3'	ImPyHpPy-γ-ImPyImPy
20	49) 5'-W G C A T W-3'	ImPyPyHp-γ-PyHpImPy
	50) 5'-W G C A A W-3'	ImPyPyPy-γ-HpHpImPy
	51) 5'-W G C A G W-3'	ImPyPyIm-γ-PyHpImPy
	52) 5'-W G C A C W-3'	ImPyPyPy-γ-ImHpImPy
	53) 5'-W G C G T W-3'	ImPyImHp-γ-PyPyImPy
25	54) 5'-W G C G A W-3'	ImPyImPy-γ-HpPyImPy
	55) 5'-W G C C T W-3'	ImPyPyHp-γ-PyImImPy
	56) 5'-W G C C A W-3'	ImPyPyPy-γ-HpImImPy
	G1) 5'-W G G G G W-3'	ImImImIm-γ-PyPyPyPy
	G2) 5'-W G G G C W-3'	ImImImPy-γ-ImPyPyPy
30	G3) 5'-W G G C G W-3'	ImImPyIm-γ-PyImPyPy
	G4) 5'-W G G C C W-3'	ImImPyPy-γ-ImImPyPy
	G5) 5'-W G C G G W-3'	ImPyImIm-γ-PyPyImPy
	G6) 5'-W G C G C W-3'	ImPyImPy-γ-ImPyImPy
	G7) 5'-W G C C G W-3'	ImPyPyIm-γ-PyImImPy
35	G8) 5'-W G C C C W-3'	ImPyPyPy-γ-ImImImPy

TABLE 6: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WTWNNW-3'

	DNA sequence	aromatic amino acid sequence
57)	5'-W T T T T W-3'	HpHpHpHp-γ-PyPyPyPy
58)	5'-W T T T A W-3'	HpHpHpPy-γ-HpPyPyPy
59)	5'-W T T T G W-3'	HpHpHpIm-γ-PyPyPyPy
60)	5'-W T T T C W-3'	HpHpHpPy-γ-ImPyPyPy
61)	5'-W T T A T W-3'	HpHpPyHp-γ-PyHpPyPy
62)	5'-W T T A A W-3'	HpHpPyPy-γ-HpHpPyPy
63)	5'-W T T A G W-3'	HpHpPyIm-γ-PyHpPyPy
64)	5'-W T T A C W-3'	HpHpPyPy-γ-ImHpPyPy
65)	5'-W T T G T W-3'	HpHpImHp-γ-PyPyPyPy
66)	5'-W T T G A W-3'	HpHpImPy-γ-HpPyPyPy
67)	5'-W T T G G W-3'	HpHpImIm-γ-PyPyPyPy
68)	5'-W T T G C W-3'	HpHpImPy-γ-ImPyPyPy
69)	5'-W T T C T W-3'	HpHpPyHp-γ-PyImPyPy
70)	5'-W T T C A W-3'	HpHpPyPy-γ-HpImPyPy
71)	5'-W T T C G W-3'	HpHpPyIm-γ-PyImPyPy
72)	5'-W T T C C W-3'	HpHpPyPy-γ-ImImPyPy
73)	5'-W T A T T W-3'	HpPyHpHp-γ-PyPyHpPy
74)	5'-W T A T A W-3'	HpPyHpPy-γ-HpPyHpPy
75)	5'-W T A T G W-3'	HpPyHpIm-γ-PyPyHpPy
76)	5'-W T A T C W-3'	HpPyHpPy-γ-ImPyHpPy
77)	5'-W T A A T W-3'	HpPyPyHp-γ-PyHpHpPy
78)	5'-W T A A A W-3'	HpPyPyPy-γ-HpHpHpPy
79)	5'-W T A A G W-3'	HpPyPyIm-γ-PyHpHpPy
80)	5'-W T A A C W-3'	HpPyPyPy-γ-ImHpHpPy
81)	5'-W T A G T W-3'	HpPyImHp-γ-PyPyHpPy
82)	5'-W T A G A W-3'	HpPyImPy-γ-HpPyHpPy
83)	5'-W T A G G W-3'	HpPyImIm-γ-PyPyHpPy
84)	5'-W T A G C W-3'	HpPyImPy-γ-ImPyHpPy
85)	5'-W T A C T W-3'	HpPyPyHp-γ-PyImHpPy
86)	5'-W T A C A W-3'	HpPyPyPy-γ-HpImHpPy
87)	5'-W T A C G W-3'	HpPyPyIm-γ-PyImHpPy
88)	5'-W T A C C W-3'	HpPyPyPy-γ-ImImHpPy

TABLE 7: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WTSNNW-3'

	DNA sequence	aromatic amino acid sequence
	89) 5'-W T G T T W-3'	HpImHpHp-γ-PyPyPyPy
5	90) 5'-W T G T A W-3'	HpImHpPy-γ-HpPyPyPy
	91) 5'-W T G T G W-3'	HpImHpIm-γ-PyPyPyPy
	92) 5'-W T G T C W-3'	HpImHpPy-γ-ImPyPyPy
	93) 5'-W T G A T W-3'	HpImPyHp-γ-PyHpPyPy
	94) 5'-W T G A A W-3'	HpImPyPy-γ-HpHpPyPy
10	95) 5'-W T G A G W-3'	HpImPyIm-γ-PyHpPyPy
	96) 5'-W T G A C W-3'	HpImPyPy-γ-ImHpPyPy
	97) 5'-W T G G T W-3'	HpImImHp-γ-PyPyPyPy
	98) 5'-W T G G A W-3'	HpImImPy-γ-HpPyPyPy
	99) 5'-W T G C T W-3'	HpImPyHp-γ-PyImPyPy
	100) 5'-W T G C A W-3'	HpImPyPy-γ-HpImPyPy
	101) 5'-W T G G G W-3'	HpImImIm-γ-PyPyPyPy
	102) 5'-W T G G C W-3'	HpImImPy-γ-ImPyPyPy
	103) 5'-W T G C G W-3'	HpImPyIm-γ-PyImPyPy
	104) 5'-W T G C C W-3'	HpImPyPy-γ-ImImPyPy
20	105) 5'-W T C T T W-3'	HpPyHpHp-γ-PyPyImPy
	106) 5'-W T C T A W-3'	HpPyHpPy-γ-HpPyImPy
	107) 5'-W T C T G W-3'	HpPyHpIm-γ-PyPyImPy
	108) 5'-W T C T C W-3'	HpPyHpPy-γ-ImPyImPy
	109) 5'-W T C A T W-3'	HpPyPyHp-γ-PyHpImPy
25	110) 5'-W T C A A W-3'	HpPyPyPy-γ-HpHpImPy
	111) 5'-W T C A G W-3'	HpPyPyIm-γ-PyHpImPy
	112) 5'-W T C A C W-3'	HpPyPyPy-γ-ImHpImPy
	113) 5'-W T C G T W-3'	HpPyImHp-γ-PyPyImPy
	114) 5'-W T C G A W-3'	HpPyImPy-γ-HpPyImPy
30	115) 5'-W T C C T W-3'	HpPyPyHp-γ-PyImImPy
	116) 5'-W T C C A W-3'	HpPyPyPy-γ-HpImImPy
	117) 5'-W T C G G W-3'	HpPyImIm-γ-PyPyImPy
	118) 5'-W T C G C W-3'	HpPyImPy-γ-ImPyImPy
	119) 5'-W T C C G W-3'	HpPyPyIm-γ-PyImImPy
35	120) 5'-W T C C C W-3'	HpPyPyPy-γ-ImImImPy

TABLE 8: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WAWNNW-3'

DNA sequence		aromatic amino acid sequence
121)	5'-W A T T T W-3'	PyHpHpHp-γ-PyPyPyHp
122)	5'-W A T T A W-3'	PyHpHpPy-γ-HpPyPyHp
123)	5'-W A T T G W-3'	PyHpHpIm-γ-PyPyPyHp
124)	5'-W A T T C W-3'	PyHpHpPy-γ-ImPyPyHp
125)	5'-W A T A T W-3'	PyHpPyHp-γ-PyHpPyHp
126)	5'-W A T A A W-3'	PyHpPyPy-γ-HpHpPyHp
127)	5'-W A T A G W-3'	PyHpPyIm-γ-PyHpPyHp
128)	5'-W A T A C W-3'	PyHpPyPy-γ-ImHpPyHp
129)	5'-W A T G T W-3'	PyHpImHp-γ-PyPyPyHp
130)	5'-W A T G A W-3'	PyHpImPy-γ-HpPyPyHp
131)	5'-W A T G G W-3'	PyHpImIm-γ-PyPyPyHp
132)	5'-W A T G C W-3'	PyHpImPy-γ-ImPyPyHp
133)	5'-W A T C T W-3'	PyHpPyHp-γ-PyImPyHp
134)	5'-W A T C A W-3'	PyHpPyPy-γ-HpImPyHp
135)	5'-W A T C G W-3'	PyHpPyIm-γ-PyImPyHp
136)	5'-W A T C C W-3'	PyHpPyPy-γ-ImImPyHp
137)	5'-W A A T T W-3'	PyPyHpHp-γ-PyPyHpHp
138)	5'-W A A T A W-3'	PyPyHpPy-γ-HpPyHpHp
139)	5'-W A A T G W-3'	PyPyHpIm-γ-PyPyHpHp
140)	5'-W A A T C W-3'	PyPyHpPy-γ-ImPyHpHp
141)	5'-W A A A T W-3'	PyPyPyHp-γ-PyHpHpHp
142)	5'-W A A A A W-3'	PyPyPyPy-γ-HpHpHpHp
143)	5'-W A A A G W-3'	PyPyPyIm-γ-PyHpHpHp
144)	5'-W A A A C W-3'	PyPyPyPy-γ-ImHpHpHp
145)	5'-W A A G T W-3'	PyPyImHp-γ-PyPyHpHp
146)	5'-W A A G A W-3'	PyPyImPy-γ-HpPyHpHp
147)	5'-W A A G G W-3'	PyPyImIm-γ-PyPyHpHp
148)	5'-W A A G C W-3'	PyPyImPy-γ-ImPyHpHp
149)	5'-W A A C T W-3'	PyPyPyHp-γ-PyImHpHp
150)	5'-W A A C A W-3'	PyPyPyPy-γ-HpImHpHp
151)	5'-W A A C G W-3'	PyPyPyIm-γ-PyImHpHp
152)	5'-W A A C C W-3'	PyPyPyPy-γ-ImImHpHp

TABLE 9: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WASNNW-3'

	DNA sequence	aromatic amino acid sequence
	153) 5'-W A G T T W-3'	PyImHpHp-γ-PyPyPyHp
5	154) 5'-W A G T A W-3'	PyImHpPy-γ-HpPyPyHp
	155) 5'-W A G T G W-3'	PyImHpIm-γ-PyPyPyHp
	156) 5'-W A G T C W-3'	PyImHpPy-γ-ImPyPyHp
	157) 5'-W A G A T W-3'	PyImPyHp-γ-PyHpPyHp
	158) 5'-W A G A A W-3'	PyImPyPy-γ-HpHpPyHp
10	159) 5'-W A G A G W-3'	PyImPyIm-γ-PyHpPyHp
	160) 5'-W A G A C W-3'	PyImPyPy-γ-ImHpPyHp
	161) 5'-W A G G T W-3'	PyImImHp-γ-PyPyPyHp
	162) 5'-W A G G A W-3'	PyImImPy-γ-HpPyPyHp
	163) 5'-W A G C T W-3'	PyImPyHp-γ-PyImPyHp
	164) 5'-W A G C A W-3'	PyImPyPy-γ-HpImPyHp
	165) 5'-W A G G G W-3'	PyImImIm-γ-PyPyPyHp
	166) 5'-W A G G C W-3'	PyImImPy-γ-ImPyPyHp
	167) 5'-W A G C G W-3'	PyImPyIm-γ-PyImPyHp
	168) 5'-W A G C C W-3'	PyImPyPy-γ-ImImPyHp
20	169) 5'-W A C T T W-3'	PyPyHpHp-γ-PyPyImHp
	170) 5'-W A C T A W-3'	PyPyHpPy-γ-HpPyImHp
	171) 5'-W A C T G W-3'	PyPyHpIm-γ-PyPyImHp
	172) 5'-W A C T C W-3'	PyPyHpPy-γ-ImPyImHp
	173) 5'-W A C A T W-3'	PyPyPyHp-γ-PyHpImHp
25	174) 5'-W A C A A W-3'	PyPyPyPy-γ-HpHpImHp
	175) 5'-W A C A G W-3'	PyPyPyIm-γ-PyHpImHp
	176) 5'-W A C A C W-3'	PyPyPyPy-γ-ImHpImHp
	177) 5'-W A C G T W-3'	PyPyImHp-γ-PyPyImHp
	178) 5'-W A C G A W-3'	PyPyImPy-γ-HpPyImHp
30	179) 5'-W A C C T W-3'	PyPyPyHp-γ-PyImImHp
	180) 5'-W A C C A W-3'	PyPyPyPy-γ-HpImImHp
	181) 5'-W A C G G W-3'	PyPyImIm-γ-PyPyImHp
	182) 5'-W A C G C W-3'	PyPyImPy-γ-ImPyImHp
	183) 5'-W A C C G W-3'	PyPyPyIm-γ-PyImImHp
35	184) 5'-W A C C C W-3'	PyPyPyPy-γ-ImImImHp

TABLE 10: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WCWNNW-3'

DNA sequence		aromatic amino acid sequence
185)	5'-W C T T T W-3'	PyHpHpHp-γ-PyPyPyIm
186)	5'-W C T T A W-3'	PyHpHpPy-γ-HpPyPyIm
187)	5'-W C T T G W-3'	PyHpHpIm-γ-PyPyPyIm
188)	5'-W C T T C W-3'	PyHpHpPy-γ-ImPyPyIm
189)	5'-W C T A T W-3'	PyHpPyHp-γ-PyHpPyIm
190)	5'-W C T A A W-3'	PyHpPyPy-γ-HpHpPyIm
191)	5'-W C T A G W-3'	PyHpPyIm-γ-PyHpPyIm
192)	5'-W C T A C W-3'	PyHpPyPy-γ-ImHpPyIm
193)	5'-W C T G T W-3'	PyHpImHp-γ-PyPyPyIm
194)	5'-W C T G A W-3'	PyHpImPy-γ-HpPyPyIm
195)	5'-W C T G G W-3'	PyHpImIm-γ-PyPyPyIm
196)	5'-W C T G C W-3'	PyHpImPy-γ-ImPyPyIm
197)	5'-W C T C T W-3'	PyHpPyHp-γ-PyImPyIm
198)	5'-W C T C A W-3'	PyHpPyPy-γ-HpImPyIm
199)	5'-W C T C G W-3'	PyHpPyIm-γ-PyImPyIm
200)	5'-W C T C C W-3'	PyHpPyPy-γ-ImImPyIm
201)	5'-W C A T T W-3'	PyPyHpHp-γ-PyPyHpIm
202)	5'-W C A T A W-3'	PyPyHpPy-γ-HpPyHpIm
203)	5'-W C A T G W-3'	PyPyHpIm-γ-PyPyHpIm
204)	5'-W C A T C W-3'	PyPyHpPy-γ-ImPyHpIm
205)	5'-W C A A T W-3'	PyPyPyHp-γ-PyHpHpIm
206)	5'-W C A A A W-3'	PyPyPyPy-γ-HpHpHpIm
207)	5'-W C A A G W-3'	PyPyPyIm-γ-PyHpHpIm
208)	5'-W C A A C W-3'	PyPyPyPy-γ-ImHpHpIm
209)	5'-W C A G T W-3'	PyPyImHp-γ-PyPyHpIm
210)	5'-W C A G A W-3'	PyPyImPy-γ-HpPyHpIm
211)	5'-W C A G G W-3'	PyPyImIm-γ-PyPyHpIm
212)	5'-W C A G C W-3'	PyPyImPy-γ-ImPyHpIm
213)	5'-W C A C T W-3'	PyPyPyHp-γ-PyImHpIm
214)	5'-W C A C A W-3'	PyPyPyPy-γ-HpImHpIm
215)	5'-W C A C G W-3'	PyPyPyIm-γ-PyImHpIm
216)	5'-W C A C C W-3'	PyPyPyPy-γ-ImImHpIm

TABLE 11: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WCSNNW-3'

DNA sequence		aromatic amino acid sequence
217)	5'-W C G T T W-3'	PyImHpHp- γ -PyPyPyIm
218)	5'-W C G T A W-3'	PyImHpPy- γ -HpPyPyIm
219)	5'-W C G T G W-3'	PyImHpIm- γ -PyPyPyIm
220)	5'-W C G T C W-3'	PyImHpPy- γ -ImPyPyIm
221)	5'-W C G A T W-3'	PyImPyHp- γ -PyHpPyIm
222)	5'-W C G A A W-3'	PyImPyPy- γ -HpHpPyIm
223)	5'-W C G A G W-3'	PyImPyIm- γ -PyHpPyIm
224)	5'-W C G A C W-3'	PyImPyPy- γ -ImHpPyIm
225)	5'-W C G G T W-3'	PyImImHp- γ -PyPyPyIm
226)	5'-W C G G A W-3'	PyImImPy- γ -HpPyPyIm
227)	5'-W C G C T W-3'	PyImPyHp- γ -PyImPyIm
228)	5'-W C G C A W-3'	PyImPyPy- γ -HpImPyIm
229)	5'-W C C T T W-3'	PyPyHpHp- γ -PyPyImIm
230)	5'-W C C T A W-3'	PyPyHpPy- γ -HpPyImIm
231)	5'-W C C T G W-3'	PyPyHpIm- γ -PyPyImIm
232)	5'-W C C T C W-3'	PyPyHpPy- γ -ImPyImIm
233)	5'-W C C A T W-3'	PyPyPyHp- γ -PyHpImIm
234)	5'-W C C A A W-3'	PyPyPyPy- γ -HpHpImIm
235)	5'-W C C A G W-3'	PyPyPyIm- γ -PyHpImIm
236)	5'-W C C A C W-3'	PyPyPyPy- γ -ImHpImIm
237)	5'-W C C G T W-3'	PyPyImHp- γ -PyPyImIm
238)	5'-W C C G A W-3'	PyPyImPy- γ -HpPyImIm
239)	5'-W C C C T W-3'	PyPyPyHp- γ -PyImImIm
240)	5'-W C C C A W-3'	PyPyPyPy- γ -HpImImIm
G9)	5'-W C G G G W-3'	PyImImIm- γ -PyPyPyIm
G10)	5'-W C G G C W-3'	PyImImPy- γ -ImPyPyIm
G11)	5'-W C G C G W-3'	PyImPyIm- γ -PyImPyIm
G12)	5'-W C G C C W-3'	PyImPyPy- γ -ImImPyIm
G13)	5'-W C C G G W-3'	PyPyImIm- γ -PyPyImIm
G14)	5'-W C C G C W-3'	PyPyImPy- γ -ImPyImIm
G15)	5'-W C C C G W-3'	PyPyPyIm- γ -PyImImIm
G16)	5'-W C C C C W-3'	PyPyPyPy- γ -ImImImIm

TABLE 12: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WGWNNW-3' with β -substitutions included.

	DNA sequence	aromatic amino acid sequence
5	3 β) 5'-W G T T G W-3'	ImHp- β -Im- γ -PyPyPyPy
	7 β) 5'-W G T A G W-3'	ImHp- β -Im- γ -PyHpPyPy
	9 β) 5'-W G T G T W-3'	Im- β -ImHp- γ -PyPyPyPy
	10 β) 5'-W G T G A W-3'	Im- β -ImPy- γ -HpPyPyPy
	11 β) 5'-W G T G G W-3'	Im- β -ImIm- γ -PyPyPyPy
10	12 β) 5'-W G T G C W-3'	Im- β -ImPy- γ -ImPyPyPy
	15 β) 5'-W G T C G W-3'	ImHp- β -Im- γ -PyImPyPy
	19 β) 5'-W G A T G W-3'	ImPy- β -Im- γ -PyPyHpPy
	23 β) 5'-W G A A G W-3'	ImPy- β -Im- γ -PyHpHpPy
	25 β) 5'-W G A G T W-3'	Im- β -ImHp- γ -PyPyHpPy
	26 β) 5'-W G A G A W-3'	Im- β -ImPy- γ -HpPyHpPy
	27 β) 5'-W G A G G W-3'	Im- β -ImIm- γ -PyPyHpPy
	28 β) 5'-W G A G C W-3'	Im- β -ImPy- γ -ImPyHpPy
	31 β) 5'-W G A C G W-3'	ImPy- β -Im- γ -PyImHpPy

TABLE 13: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WGSNNW-3' with β -substitutions included.

	DNA sequence	aromatic amino acid sequence
	35 β) 5'-W G G T G W-3'	ImIm- β -Im- γ -PyPyPyPy
5	39 β) 5'-W G G A G W-3'	ImIm- β -Im- γ -PyHpPyPy
	45 β) 5'-W G C T T W-3'	ImPyHpHp- γ -Py- β -ImPy
	46 β) 5'-W G C T A W-3'	ImPyHpPy- γ -Hp- β -ImPy
	47 β) 5'-W G C T G W-3'	ImPyHpIm- γ -Py- β -ImPy
	47 β 2) 5'-W G C T G W-3'	ImPy- β -Im- γ -Py- β -ImPy
10	48 β) 5'-W G C T C W-3'	ImPyHpPy- γ -Im- β -ImPy
	49 β) 5'-W G C A T W-3'	ImPyPyHp- γ -Py- β -ImPy
	50 β) 5'-W G C A A W-3'	ImPyPyPy- γ -Hp- β -ImPy
	51 β) 5'-W G C A G W-3'	ImPyPyIm- γ -Py- β -ImPy
	51 β 2) 5'-W G C A G W-3'	ImPy- β -Im- γ -Py- β -ImPy
	52 β) 5'-W G C A C W-3'	ImPyPyPy- γ -Im- β -ImPy
	53 β) 5'-W G C G T W-3'	ImPyImHp- γ -Py- β -ImPy
	53 β 2) 5'-W G C G T W-3'	Im- β -ImHp- γ -Py- β -ImPy
	54 β) 5'-W G C G A W-3'	ImPyImPy- γ -Hp- β -ImPy
	54 β 2) 5'-W G C G A W-3'	Im- β -ImPy- γ -Hp- β -ImPy
20	G3 β) 5'-W G G C G W-3'	ImIm- β -Im- γ -PyImPyPy
	G5 β) 5'-W G C G G W-3'	ImPyImIm- γ -Py- β -ImPy
	G5 β 2) 5'-W G C G G W-3'	Im- β -ImIm- γ -Py- β -ImPy
	G6 β) 5'-W G C G C W-3'	ImPyImPy- γ -Im- β -ImPy
	G6 β 2) 5'-W G C G C W-3'	Im- β -ImPy- γ -Im- β -ImPy
25	G7 β) 5'-W G C C G W-3'	ImPy- β -Im- γ -PyImImPy

TABLE 14: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WTWNNW-3' with β -substitutions included.

	DNA sequence	aromatic amino acid sequence
59 β)	5'-W T T T G W-3'	HpHp- β -Im- γ -PyPyPyPy
63 β)	5'-W T T A G W-3'	HpHp- β -Im- γ -PyHpPyPy
65 β)	5'-W T T G T W-3'	Hp- β -ImHp- γ -PyPyPyPy
66 β)	5'-W T T G A W-3'	Hp- β -ImPy- γ -HpPyPyPy
67 β)	5'-W T T G G W-3'	Hp- β -ImIm- γ -PyPyPyPy
68 β)	5'-W T T G C W-3'	Hp- β -ImPy- γ -ImPyPyPy
71 β)	5'-W T T C G W-3'	HpHp- β -Im- γ -PyImPyPy
75 β)	5'-W T A T G W-3'	HpPy- β -Im- γ -PyPyHpPy
79 β)	5'-W T A A G W-3'	HpPy- β -Im- γ -PyHpHpPy
81 β)	5'-W T A G T W-3'	Hp- β -ImHp- γ -PyPyHpPy
82 β)	5'-W T A G A W-3'	Hp- β -ImPy- γ -HpPyHpPy
83 β)	5'-W T A G G W-3'	Hp- β -ImIm- γ -PyPyHpPy
84 β)	5'-W T A G C W-3'	Hp- β -ImPy- γ -ImPyHpPy
87 β)	5'-W T A C G W-3'	HpPy- β -Im- γ -PyImHpPy

TABLE 15: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WTSNNW-3' with β -substitutions included.

	DNA sequence	aromatic amino acid sequence
	91 β) 5'-W T G T G W-3'	HpIm- β -Im- γ -PyPyPyPy
5	95 β) 5'-W T G A G W-3'	HpIm- β -Im- γ -PyHpPyPy
	103 β) 5'-W T G C G W-3'	HpIm- β -Im- γ -PyImPyPy
	105 β) 5'-W T C T T W-3'	HpPyHpHp- γ -Py- β -ImPy
	106 β) 5'-W T C T A W-3'	HpPyHpPy- γ -Hp- β -ImPy
	107 β) 5'-W T C T G W-3'	HpPyHpIm- γ -Py- β -ImPy
10	107 β 2) 5'-W T C T G W-3'	HpPy- β -Im- γ -Py- β -ImPy
	108 β) 5'-W T C T C W-3'	HpPyHpPy- γ -Im- β -ImPy
	109 β) 5'-W T C A T W-3'	HpPyPyHp- γ -Py- β -ImPy
	110 β) 5'-W T C A A W-3'	HpPyPyPy- γ -Hp- β -ImPy
	111 β) 5'-W T C A G W-3'	HpPyPyIm- γ -Py- β -ImPy
	111 β 2) 5'-W T C A G W-3'	HpPy- β -Im- γ -Py- β -ImPy
	112 β) 5'-W T C A C W-3'	HpPyPyPy- γ -Im- β -ImPy
	113 β) 5'-W T C G T W-3'	HpPyImHp- γ -Py- β -ImPy
	113 β 2) 5'-W T C G T W-3'	Hp- β -ImHp- γ -Py- β -ImPy
	114 β) 5'-W T C G A W-3'	HpPyImPy- γ -Hp- β -ImPy
20	114 β 2) 5'-W T C G A W-3'	Hp- β -ImPy- γ -Hp- β -ImPy
	117 β) 5'-W T C G G W-3'	HpPyImIm- γ -Py- β -ImPy
	117 β 2) 5'-W T C G G W-3'	Hp- β -ImIm- γ -Py- β -ImPy
	118 β) 5'-W T C G C W-3'	HpPyImPy- γ -Im- β -ImPy
	118 β 2) 5'-W T C G C W-3'	Hp- β -ImPy- γ -Im- β -ImPy
25	119 β) 5'-W T C C G W-3'	HpPy- β -Im- γ -PyImImPy

TABLE 16: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WAWNNW-3' with β -substitutions included.

	DNA sequence	aromatic amino acid sequence
	123 β) 5'-W A T T G W-3'	PyHp- β -Im- γ -PyPyPyHp
5	127 β) 5'-W A T A G W-3'	PyHp- β -Im- γ -PyHpPyHp
	129 β) 5'-W A T G T W-3'	Py- β -ImHp- γ -PyPyPyHp
	130 β) 5'-W A T G A W-3'	Py- β -ImPy- γ -HpPyPyHp
	131 β) 5'-W A T G G W-3'	Py- β -ImIm- γ -PyPyPyHp
	132 β) 5'-W A T G C W-3'	Py- β -ImPy- γ -ImPyPyHp
10	135 β) 5'-W A T C G W-3'	PyHp- β -Im- γ -PyImPyHp
	139 β) 5'-W A A T G W-3'	PyPy- β -Im- γ -PyPyHpHp
	143 β) 5'-W A A A G W-3'	PyPy- β -Im- γ -PyHpHpHp
	145 β) 5'-W A A G T W-3'	Py- β -ImHp- γ -PyPyHpHp
	146 β) 5'-W A A G A W-3'	Py- β -ImPy- γ -HpPyHpHp
	147 β) 5'-W A A G G W-3'	Py- β -ImIm- γ -PyPyHpHp
	148 β) 5'-W A A G C W-3'	Py- β -ImPy- γ -ImPyHpHp
	151 β) 5'-W A A C G W-3'	PyPy- β -Im- γ -PyImHpHp

TABLE 17: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WASNNW-3' with β -substitutions included.

	DNA sequence	aromatic amino acid sequence
	155 β) 5'-W A G T G W-3'	PyIm- β -Im- γ -PyPyPyHp
5	159 β) 5'-W A G A G W-3'	PyIm- β -Im- γ -PyHpPyHp
	167 β) 5'-W A G C G W-3'	PyIm- β -Im- γ -PyImPyHp
	169 β) 5'-W A C T T W-3'	PyPyHpHp- γ -Py- β -ImHp
	170 β) 5'-W A C T A W-3'	PyPyHpPy- γ -Hp- β -ImHp
	171 β) 5'-W A C T G W-3'	PyPyHpIm- γ -Py- β -ImHp
10	171 β 2) 5'-W A C T G W-3'	PyPy- β -Im- γ -Py- β -ImHp
	172 β) 5'-W A C T C W-3'	PyPyHpPy- γ -Im- β -ImHp
	173 β) 5'-W A C A T W-3'	PyPyPyHp- γ -Py- β -ImHp
	174 β) 5'-W A C A A W-3'	PyPyPyPy- γ -Hp- β -ImHp
	175 β) 5'-W A C A G W-3'	PyPyPyIm- γ -Py- β -ImHp
	175 β 2) 5'-W A C A G W-3'	PyPy- β -Im- γ -Py- β -ImHp
	176 β) 5'-W A C A C W-3'	PyPyPyPy- γ -Im- β -ImHp
	177 β) 5'-W A C G T W-3'	PyPyImHp- γ -Py- β -ImHp
	177 β 2) 5'-W A C G T W-3'	Py- β -ImHp- γ -Py- β -ImHp
	178 β) 5'-W A C G A W-3'	PyPyImPy- γ -Hp- β -ImHp
20	178 β 2) 5'-W A C G A W-3'	Py- β -ImPy- γ -Hp- β -ImHp
	181 β) 5'-W A C G G W-3'	PyPyImIm- γ -Py- β -ImHp
	181 β 2) 5'-W A C G G W-3'	Py- β -ImIm- γ -Py- β -ImHp
	182 β) 5'-W A C G C W-3'	PyPyImPy- γ -Im- β -ImHp
	182 β 2) 5'-W A C G C W-3'	Py- β -ImPy- γ -Im- β -ImHp
25	183 β 2) 5'-W A C C G W-3'	PyPy- β -Im- γ -PyImImHp

TABLE 18: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WCWNNW-3' with β -substitutions included.

	DNA sequence	aromatic amino acid sequence
	185 β) 5'-W C T T T W-3'	PyHpHpHp- γ -PyPy- β -Im
5	186 β) 5'-W C T T A W-3'	PyHpHpPy- γ -HpPy- β -Im
	187 β) 5'-W C T T G W-3'	PyHpHpIm- γ -PyPy- β -Im
	187 β 2) 5'-W C T T G W-3'	PyHp- β -Im- γ -PyPy- β -Im
	188 β) 5'-W C T T C W-3'	PyHpHpPy- γ -ImPy- β -Im
	189 β) 5'-W C T A T W-3'	PyHpPyHp- γ -PyHp- β -Im
10	190 β) 5'-W C T A A W-3'	PyHpPyPy- γ -HpHp- β -Im
	191 β) 5'-W C T A G W-3'	PyHpPyIm- γ -PyHp- β -Im
	191 β 2) 5'-W C T A G W-3'	PyHp- β -Im- γ -PyHp- β -Im
	192 β) 5'-W C T A C W-3'	PyHpPyPy- γ -ImHp- β -Im
	193 β) 5'-W C T G T W-3'	PyHpImHp- γ -PyPy- β -Im
	193 β 2) 5'-W C T G T W-3'	Py- β -ImHp- γ -PyPy- β -Im
	194 β) 5'-W C T G A W-3'	PyHpImPy- γ -HpPy- β -Im
	194 β 2) 5'-W C T G A W-3'	Py- β -ImPy- γ -HpPy- β -Im
	195 β) 5'-W C T G G W-3'	PyHpImIm- γ -PyPy- β -Im
	195 β 2) 5'-W C T G G W-3'	Py- β -ImIm- γ -PyPy- β -Im
20	196 β) 5'-W C T G C W-3'	PyHpImPy- γ -ImPy- β -Im
	196 β 2) 5'-W C T G C W-3'	Py- β -ImPy- γ -ImPy- β -Im
	197 β) 5'-W C T C T W-3'	PyHpPyHp- γ -PyIm- β -Im
	198 β) 5'-W C T C A W-3'	PyHpPyPy- γ -HpIm- β -Im
	199 β) 5'-W C T C G W-3'	PyHpPyIm- γ -PyIm- β -Im
25	199 β 2) 5'-W C T C G W-3'	PyHp- β -Im- γ -PyIm- β -Im
	200 β) 5'-W C T C C W-3'	PyHpPyPy- γ -ImIm- β -Im
	201 β) 5'-W C A T T W-3'	PyPyHpHp- γ -PyPy- β -Im
	202 β) 5'-W C A T A W-3'	PyPyHpPy- γ -HpPy- β -Im
	203 β) 5'-W C A T G W-3'	PyPyHpIm- γ -PyPy- β -Im
30	203 β 2) 5'-W C A T G W-3'	PyPy- β -Im- γ -PyPy- β -Im
	204 β) 5'-W C A T C W-3'	PyPyHpPy- γ -ImPy- β -Im
	205 β) 5'-W C A A T W-3'	PyPyPyHp- γ -PyHp- β -Im
	206 β) 5'-W C A A A W-3'	PyPyPyPy- γ -HpHp- β -Im

TABLE 18 (cont): 8-ring Hairpin Polyamides for 6-bp 5'-WCWNNW-3' with β -substitutions included.

	DNA sequence	aromatic amino acid sequence
	207 β) 5'-W C A A G W-3'	PyPyPyIm- γ -PyHp- β -Im
5	207 β 2) 5'-W C A A G W-3'	PyPy- β -Im- γ -PyHp- β -Im
	208 β) 5'-W C A A C W-3'	PyPyPyPy- γ -ImHp- β -Im
	209 β) 5'-W C A G T W-3'	PyPyImHp- γ -PyPy- β -Im
	209 β 2) 5'-W C A G T W-3'	Py- β -ImHp- γ -PyPy- β -Im
	210 β) 5'-W C A G A W-3'	PyPyImPy- γ -HpPy- β -Im
10	210 β 2) 5'-W C A G A W-3'	Py- β -ImPy- γ -HpPy- β -Im
	211 β) 5'-W C A G G W-3'	PyPyImIm- γ -PyPy- β -Im
	211 β 2) 5'-W C A G G W-3'	Py- β -ImIm- γ -PyPy- β -Im
	212 β) 5'-W C A G C W-3'	PyPyImPy- γ -ImPy- β -Im
	212 β 2) 5'-W C A G C W-3'	Py- β -ImPy- γ -ImPy- β -Im
	213 β) 5'-W C A C T W-3'	PyPyPyHp- γ -PyIm- β -Im
	214 β) 5'-W C A C A W-3'	PyPyPyPy- γ -HpIm- β -Im
	215 β) 5'-W C A C G W-3'	PyPyPyIm- γ -PyIm- β -Im
	215 β 2) 5'-W C A C G W-3'	PyPy- β -Im- γ -PyIm- β -Im
	216 β) 5'-W C A C C W-3'	PyPyPyPy- γ -ImIm- β -Im

TABLE 19: 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WCSNNW-3' with β -substitutions included.

	DNA sequence	aromatic amino acid sequence
	217 β) 5'-W C G T T W-3'	PyImHpHp- γ -PyPy- β -Im
5	218 β) 5'-W C G T A W-3'	PyImHpPy- γ -HpPy- β -Im
	219 β) 5'-W C G T G W-3'	PyImHpIm- γ -PyPy- β -Im
	219 β 2) 5'-W C G T G W-3'	PyIm- β -Im- γ -PyPy- β -Im
	220 β) 5'-W C G T C W-3'	PyImHpPy- γ -ImPy- β -Im
	221 β) 5'-W C G A T W-3'	PyImPyHp- γ -PyHp- β -Im
10	222 β) 5'-W C G A A W-3'	PyImPyPy- γ -HpHp- β -Im
	223 β) 5'-W C G A G W-3'	PyImPyIm- γ -PyHp- β -Im
	223 β 2) 5'-W C G A G W-3'	PyIm- β -Im- γ -PyHp- β -Im
	224 β) 5'-W C G A C W-3'	PyImPyPy- γ -ImHp- β -Im
	225 β) 5'-W C G G T W-3'	PyImImHp- γ -PyPy- β -Im
	226 β) 5'-W C G G A W-3'	PyImImPy- γ -HpPy- β -Im
	227 β) 5'-W C G C T W-3'	PyImPyHp- γ -PyIm- β -Im
	228 β) 5'-W C G C A W-3'	PyImPyPy- γ -HpIm- β -Im
	229 β) 5'-W C C T T W-3'	PyPyHpHp- γ -Py- β -ImIm
	230 β) 5'-W C C T A W-3'	PyPyHpPy- γ -Hp- β -ImIm
20	231 β) 5'-W C C T G W-3'	PyPyHpIm- γ -Py- β -ImIm
	231 β 2) 5'-W C C T G W-3'	PyPy- β -Im- γ -Py- β -ImIm
	232 β) 5'-W C C T C W-3'	PyPyHpPy- γ -Im- β -ImIm
	233 β) 5'-W C C A T W-3'	PyPyPyHp- γ -Py- β -ImIm
	234 β) 5'-W C C A A W-3'	PyPyPyPy- γ -Hp- β -ImIm
25	235 β) 5'-W C C A G W-3'	PyPyPyIm- γ -Py- β -ImIm
	235 β 2) 5'-W C C A G W-3'	PyPy- β -Im- γ -Py- β -ImIm
	236 β) 5'-W C C A C W-3'	PyPyPyPy- γ -Im- β -ImIm
	237 β) 5'-W C C G T W-3'	PyPyImHp- γ -Py- β -ImIm
	237 β 2) 5'-W C C G T W-3'	Py- β -ImHp- γ -Py- β -ImIm
30	238 β) 5'-W C C G A W-3'	PyPyImPy- γ -Hp- β -ImIm
	238 β 2) 5'-W C C G A W-3'	Py- β -ImPy- γ -Hp- β -ImIm
	G9 β) 5'-W C G G G W-3'	PyImImIm- γ -PyPy- β -Im
	G10 β) 5'-W C G G C W-3'	PyImImPy- γ -ImPy- β -Im

TABLE 19 (cont): 8-ring Hairpin Polyamides for recognition of 6-bp 5'-WCSNNW-3' with β -substitutions included.

	DNA sequence	aromatic amino acid sequence
5	G11 β) 5'-W C G C G W-3'	PyImPyIm- γ -PyIm- β -Im
	G11 β 2) 5'-W C G C G W-3'	PyIm- β -Im- γ -PyIm- β -Im
	G12 β) 5'-W C G C C W-3'	PyImPyPy- γ -ImIm- β -Im
	G13 β) 5'-W C C G G W-3'	PyPyImIm- γ -Py- β -ImIm
	G13 β 2) 5'-W C C G G W-3'	Py- β -ImIm- γ -Py- β -ImIm
10	G14 β) 5'-W C C G C W-3'	PyPyImPy- γ -Im- β -ImIm
	G14 β 2) 5'-W C C G C W-3'	Py- β -ImPy- γ -Im- β -ImIm
	G15 β) 5'-W C C C G W-3'	PyPy- β -Im- γ -PyImImIm

If the process described above of designing a preferred polyamide molecule $X_1X_2X_3X_4\gamma\text{-}X_5X_6X_7X_8$ comprising eight aromatic aminoacid residues does not produce a selective polyamide that binds to the target identified DNA sequence with subnanomolar affinity and with a selectivity over mismatch sequences of greater than a factor of ten, a polyamide molecule $X_1X_2X_3X_4X_5\gamma\text{-}X_6X_7X_8X_9X_{10}$ having five carboxamide binding pairs can be designed that is selective for a seven base pair identified target 5'-WNNNNNW-3' sequence. The design and synthesis of the five binding pair polyamide is similar to that of the four binding pair polyamide $X_1X_2X_3X_4\gamma\text{-}X_5X_6X_7X_8$ described above.

The polyamide design process, shown schematically in Figure 7 provides a method for designing a ten carboxamide residue molecule comprising five carboxamide binding pairs for selective detection and binding of a target seven base pair 5'-WNNNNNW-3' sequence in the minor groove of double stranded DNA. The design process identifies an appropriate polyamide ligand for recognition of a predetermined seven base pair, 5'-WNNNNNW-3' sequence with subnanomolar affinity and >10-fold specificity versus mismatch sites. Trauger, J.W., Baird, E. E. Dervan, P.B. describes the recognition of DNA by designed ligands at subnanomolar concentrations. *Nature* **382**, 559-561 (1996).

In order to prepare a polyamide molecule specific for an identified seven base pair sequence of double stranded DNA, a user starts the 10-ring hairpin design process that implements the minor groove recognition pairing code summarized in Table 2 above. In the

design process a 5'-WNNNNNW-3' sequence was identified. In a preferred embodiment, the identified sequence was located within a gene promoter. The identified sequence was then defined as 5'-W**abcde**W-3' in a stepwise process wherein **a**, **b**, **c**, **d**, and **e**, were sequentially and independently defined as A, G, C, or T. The structure of the polyamide molecule was then correspondingly defined by sequentially choosing antiparallel carboxamide binding pairs according to the minor groove pairing code summarized in Table 2 above. Thus, if **a** was G, then X₁ was defined as Im, and X₁₀ was defined as Py. If **a** was C, then X₁ was defined as Py, and X₁₀ was defined as Im. If **a** was T, then X₁ was defined as Hp, and X₁₀ was defined as Py. If **a** was A, then X₁ was defined as Py, and X₁₀ was defined as Hp.

Similarly, **b** was defined as A, G, C, or T and corresponding carboxamide binding pairs were defined. According to the same rules, if **b** was G, then X₂ was defined as Im, and X₉ was defined as Py. If **b** was C, then X₂ was defined as Py, and X₉ was defined as Im. Likewise, if **b** was T, then X₂ was defined as Hp, and X₉ was defined as Py. If **b** was A, then X₂ was defined as Py, and X₉ was defined as Hp.

The next step was to define **c** as A, G, C, or T and then define corresponding carboxamide binding pairs. Following the same rules, if **c** was G, then X₃ was defined as Im, and X₈ was defined as Py. If **c** was C, then X₃ was defined as Py, and X₈ was defined as Im. Similarly, if **c** was T, then X₃ was defined as Hp, and X₈ was defined as Py. If **c** was A, then X₃ was defined as Py, and X₈ was defined as Hp. Similarly, **d** was defined as A, G, C, or T and the corresponding carboxamide binding pair was defined. According to the above rules, if **d** was G, then X₄ was defined as Im, and X₇ was defined as Py. If **d** was C, then X₄ was defined as Py, and X₇ was defined as Im. If **d** was T, then X₄ was defined as Hp, and X₇ was defined as Py. If **d** was A, then X₄ was defined as Py, and X₇ was defined as Hp. Finally, **e** was defined as A, G, C, or T and the corresponding carboxamide binding pair was defined. According to the above rules, if **e** was G, then X₅ was defined as Im, and X₆ was defined as Py. If **e** was C, then X₅ was defined as Py, and X₆ was defined as Im. If **e** was T, then X₅ was defined as Hp, and X₆ was defined as Py. If **e** was A, then X₅ was defined as Py, and X₆ was defined as Hp.

With all ten carboxamide residues that participate in the binding pairs now defined, the designed polyamide X₁X₂X₃X₄X₅-γ-X₆X₇X₈X₉X₁₀ suitable for binding to the identified

sequence was synthesized using known techniques. Baird, E. E. & Dervan, P. B. describes the solid phase synthesis of polyamides containing imidazole and pyrrole amino acids. *J. Am. Chem. Soc.* **118**, 6141-6146 (1996); also see PCT US 97/003332.

5 The binding affinity of the synthesized polyamide to the identified sequence was determined using a quantitative DNase footprint titration method for studying protein-DNA interactions described by Brenowitz, M., Senear, D. F., Shea, M. A. & Ackers, G. K., *Methods Enzymol.* **130**, 132-181 (1986). If the affinity of the synthesized polyamide at the target site was not subnanomolar affinity then substituting at least one β -alanine residue for a pyrrole or 3-
10 hydroxypyrrole residue was considered in order to optimize the exact positions of the binding pairs of aromatic amino acids. If the affinity of the polyamide at the target site was subnanomolar affinity then the sequence specificity of the polyamide versus mismatch sequences was determined. If the specificity versus mismatch sites was not > 10-fold specificity then adding a β -alanine (shown schematically in Figure 8) was considered, in order to optimize the positions of the aromatic amino acids in relationship to the base pairs in the minor groove. Specificity of the polyamide molecule for the target identified sequence versus mismatch sequence sites of greater than 10-fold was considered a successful result of design process.

15 The 1024 polyamide molecules comprising five carboxamide binding pairs that were designed using this method are useful for binding to the 1024 target 5'-NNNNN-3' core sequences, and are listed in Tables 20-51. A corresponding polyamide molecule was designed for each DNA sequence (241-1232) and (G17-G48) using the process outlined above and shown schematically in Figure 7.

20 If the synthesized polyamide molecule did not bind to the target identified sequence with subnanomolar affinity or if the synthesized polyamide molecule did not exhibit a specificity for the target identified sequence versus mismatch sequence sites of greater than 10-fold, the option of substituting an aliphatic amino acid residue for one of the carboxamide residues was considered. The preferred aliphatic amino acid residue is β -alanine. At least one aliphatic
25 amino acid residue such as a β -alanine residue provided some flexibility to the central portion of the polyamide molecule, acting as a "spring" to permit optimization of the hydrogen bonding between the carboxamide binding pairs and the nucleotide bases of the double stranded DNA.

In general, it was not found to be advantageous to replace either member of the terminal carboxamide binding pair, X₁/X₁₀, with β -alanine. Similarly, β -alanine was not substituted for members of the binding pair, X₅/X₆, adjacent to the γ hairpin residue. β -alanine residues were not substituted for N-methylimidazole residues. The use of β -alanine in place of a pyrrole or 3-hydroxypyrrole amino acid residue provides aromatic/aliphatic pairing (Im/ β , β /Im, Hp/ β , β /Hp, Py/ β , and β /Py) and aliphatic/aliphatic pairing (β / β) substitution.

The method for selecting which pyrrole amino acid to substitute with β -alanine is schematically illustrated in Figure 8. Selective placement of an aliphatic β -alanine (β) residue paired with either a pyrrole (Py), 3-hydroxypyrrole (Hp), or imidazole (Im) aromatic amino acid or another β -alanine residue is found to compensate for sequence composition effects to improve recognition and binding of the minor groove of DNA by pyrrole-imidazole polyamides of the present invention. If an all-ring polyamide has been found to have an affinity which is not subnanomolar, or a specificity versus mismatch sequences which is less than 10-fold it may be caused by DNA sequence-composition effects which can be reduced by replacement of an aromatic amino acid with an aliphatic β -alanine residue. In a polyamide molecule that comprises five binding pairs it is only beneficial to place β -alanine in positions X₂, X₃, X₄, X₇, X₈, and X₉. No more than two β -alanine residues may be placed within a single hairpin structure. No more than a single β -residue may be placed within each individual polyamide subunit, e.g., if X₂ is replaced with β -alanine, X₃ or X₄ cannot be replaced as well.

These rules and others were implemented in the method schematically illustrated in Figure 8. This process is suitable for the refinement of the design polyamide comprising five binding pairs that has been designed by the method illustrated in Figure 7, but which lacks subnanomolar affinity or greater than 10-fold specificity at the identified target DNA sequence. As in the basic design method, the designed polyamides are synthesized and the affinity and specificity of binding to the target DNA were determined.

As discussed above, for a given 10-ring polyamide molecule there are six possible outcomes for the process of substituting a β -alanine residue for an aromatic amino acid residue. First, there may be no position at which it is possible to add a β -alanine residue; in such case, a better binding affinity or selectivity can be sought in the design and synthesis of a polyamide

with four or six carboxamide binding pairs, described below. Second, the process may result in a derivative which contains a single β -alanine substitution (such derivatives are numbered according to the parent numbering scheme such that a single β -derivative of compound 5 would be called 5 β), which is sufficient to produce subnanomolar binding affinity and >10-fold specificity, and at which point the process is deemed complete.

Third, the process of Figure 8 may result in a polyamide which contains a single β -alanine substitution which is not sufficient to produce subnanomolar binding affinity and >10-fold specificity, but where there are no additional positions in which it is possible to substitute a β -alanine residue, and in such a case a paired β -alanine residue should be added as described in Figure 9 and text below. Fourth, the process of Figure 7 may result in a polyamide that contains a single β -alanine substitution that is not sufficient to produce subnanomolar binding affinity and >10-fold specificity, but where there is an additional position for β -alanine substitution that does produce a polyamide with the criterion level of affinity and selectivity. Tables 52-83 list polyamide compounds 241 β -1232 β and G17 β -G48 β , corresponding to DNA sequences 241-1232 and G17 - G48, that contain one or two β -alanine residues.

A fifth possibility is that substitution at a second position by the method illustrated in Figure 9 with a paired β -alanine residue is not sufficient to produce a polyamide having the subnanomolar binding affinity and >10-fold specificity, and a polyamide with four or six carboxamide binding pairs, should be designed and synthesized, as described below. Finally, the design process may result in a polyamide that has a paired β -alanine substitution that is sufficient to produce subnanomolar binding affinity and >10-fold specificity, and therefore the design process is deemed complete. Tables 52-83 list polyamide compounds 241 β -1232 β and G17 β -G48 β , corresponding to DNA sequences 241-1232 and G17 - G48, that contain one or two β -alanine residues. In addition, Tables 52-83 list polyamides corresponding to sequences (241-1232) and (G17-G48) labeled (241 β p-1232 β p) and (G17 β p-G48 β p) that contain paired β/β residues added by the process described in Figure 9.

TABLE 20: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGGWNNW-3'

	DNA sequence	aromatic amino acid sequence
5	241) 5'-W G G T T T W-3'	ImImHpHpHp- γ -PyPyPyPyPy
	242) 5'-W G G T T A W-3'	ImImHpHpPy- γ -HpPyPyPyPy
	243) 5'-W G G T T G W-3'	ImImHpHpIm- γ -PyPyPyPyPy
	244) 5'-W G G T T C W-3'	ImImHpHpPy- γ -ImPyPyPyPy
	245) 5'-W G G T A T W-3'	ImImHpPyHp- γ -PyHpPyPyPy
	246) 5'-W G G T A A W-3'	ImImHpPyPy- γ -HpHpPyPyPy
10	247) 5'-W G G T A G W-3'	ImImHpPyIm- γ -PyHpPyPyPy
	248) 5'-W G G T A C W-3'	ImImHpPyPy- γ -ImHpPyPyPy
	249) 5'-W G G T G T W-3'	ImImHpImHp- γ -PyPyPyPyPy
	250) 5'-W G G T G A W-3'	ImImHpImPy- γ -HpPyPyPyPy
	251) 5'-W G G T G G W-3'	ImImHpImIm- γ -PyPyPyPyPy
	252) 5'-W G G T G C W-3'	ImImHpImPy- γ -ImPyPyPyPy
	253) 5'-W G G T C T W-3'	ImImHpPyHp- γ -PyImPyPyPy
	254) 5'-W G G T C A W-3'	ImImHpPyPy- γ -HpImPyPyPy
	255) 5'-W G G T C G W-3'	ImImHpPyIm- γ -PyImPyPyPy
	256) 5'-W G G T C C W-3'	ImImHpPyPy- γ -ImImPyPyPy
20	257) 5'-W G G A T T W-3'	ImImPyHpHp- γ -PyPyHpPyPy
	258) 5'-W G G A T A W-3'	ImImPyHpPy- γ -HpPyHpPyPy
	259) 5'-W G G A T G W-3'	ImImPyHpIm- γ -PyPyHpPyPy
	260) 5'-W G G A T C W-3'	ImImPyHpPy- γ -ImPyHpPyPy
	261) 5'-W G G A A T W-3'	ImImPyPyHp- γ -PyHpHpPyPy
25	262) 5'-W G G A A A W-3'	ImImPyPyPy- γ -HpHpHpPyPy
	263) 5'-W G G A A G W-3'	ImImPyPyIm- γ -PyHpHpPyPy
	264) 5'-W G G A A C W-3'	ImImPyPyPy- γ -ImHpHpPyPy
	265) 5'-W G G A G T W-3'	ImImPyImHp- γ -PyPyHpPyPy
	266) 5'-W G G A G A W-3'	ImImPyImPy- γ -HpPyHpPyPy
30	267) 5'-W G G A G G W-3'	ImImPyImIm- γ -PyPyHpPyPy
	268) 5'-W G G A G C W-3'	ImImPyImPy- γ -ImPyHpPyPy
	269) 5'-W G G A C T W-3'	ImImPyPyHp- γ -PyImHpPyPy
	270) 5'-W G G A C A W-3'	ImImPyPyPy- γ -HpImHpPyPy
	271) 5'-W G G A C G W-3'	ImImPyPyIm- γ -PyImHpPyPy
35	272) 5'-W G G A C C W-3'	ImImPyPyPy- γ -ImImHpPyPy

TABLE 21: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGGSNNW-3'

	DNA sequence	aromatic amino acid sequence
5	273) 5'-W G G G T T W-3'	ImImImHpHp-γ-PyPyPyPyPy
	274) 5'-W G G G T A W-3'	ImImImHpPy-γ-HpPyPyPyPy
	275) 5'-W G G G T G W-3'	ImImImHpIm-γ-PyPyPyPyPy
	276) 5'-W G G G T C W-3'	ImImImHpPy-γ-ImPyPyPyPy
	277) 5'-W G G G A T W-3'	ImImImPyHp-γ-PyHpPyPyPy
	278) 5'-W G G G A A W-3'	ImImImPyPy-γ-HpHpPyPyPy
10	279) 5'-W G G G A G W-3'	ImImImPyIm-γ-PyHpPyPyPy
	280) 5'-W G G G A C W-3'	ImImImPyPy-γ-ImHpPyPyPy
	281) 5'-W G G G G T W-3'	ImImImImHp-γ-PyPyPyPyPy
	282) 5'-W G G G G A W-3'	ImImImImPy-γ-HpPyPyPyPy
	283) 5'-W G G G C T W-3'	ImImImPyHp-γ-PyImPyPyPy
	284) 5'-W G G G C A W-3'	ImImImPyPy-γ-HpImPyPyPy
	285) 5'-W G G C T T W-3'	ImImPyHpHp-γ-PyPyImPyPy
	286) 5'-W G G C T A W-3'	ImImPyHpPy-γ-HpPyImPyPy
	287) 5'-W G G C T G W-3'	ImImPyHpIm-γ-PyPyImPyPy
	288) 5'-W G G C T C W-3'	ImImPyHpPy-γ-ImPyImPyPy
20	289) 5'-W G G C A T W-3'	ImImPyPyHp-γ-PyHpImPyPy
	290) 5'-W G G C A A W-3'	ImImPyPyPy-γ-HpHpImPyPy
	291) 5'-W G G C A G W-3'	ImImPyPyIm-γ-PyHpImPyPy
	292) 5'-W G G C A C W-3'	ImImPyPyPy-γ-ImHpImPyPy
	293) 5'-W G G C G T W-3'	ImImPyImHp-γ-PyPyImPyPy
25	294) 5'-W G G C G A W-3'	ImImPyImPy-γ-HpPyImPyPy
	295) 5'-W G G C C T W-3'	ImImPyPyHp-γ-PyImImPyPy
	296) 5'-W G G C C A W-3'	ImImPyPyPy-γ-HpImImPyPy
	G17) 5'-W G G G G W-3'	ImImImImIm-γ-PyPyPyPyPy
	G18) 5'-W G G G G C W-3'	ImImImImPy-γ-ImPyPyPyPy
30	G19) 5'-W G G G C G W-3'	ImImImPyIm-γ-PyImPyPyPy
	G20) 5'-W G G G C C W-3'	ImImImPyPy-γ-ImImPyPyPy
	G21) 5'-W G G C G G W-3'	ImImPyImIm-γ-PyPyImPyPy
	G22) 5'-W G G C G C W-3'	ImImPyImPy-γ-ImPyImPyPy
	G23) 5'-W G G C C G W-3'	ImImPyPyIm-γ-PyImImPyPy
35	G24) 5'-W G G C C C W-3'	ImImPyPyPy-γ-ImImImPyPy

TABLE 22: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGTWNNW-3'

DNA sequence		aromatic amino acid sequence
297)	5'-W G T T T T W-3'	ImHpHpHpHp-γ-PyPyPyPyPy
298)	5'-W G T T T A W-3'	ImHpHpHpPy-γ-HpPyPyPyPy
299)	5'-W G T T T G W-3'	ImHpHpHpIm-γ-PyPyPyPyPy
300)	5'-W G T T T C W-3'	ImHpHpHpPy-γ-ImPyPyPyPy
301)	5'-W G T T A T W-3'	ImHpHpPyHp-γ-PyHpPyPyPy
302)	5'-W G T T A A W-3'	ImHpHpPyPy-γ-HpHpPyPyPy
303)	5'-W G T T A G W-3'	ImHpHpPyIm-γ-PyHpPyPyPy
304)	5'-W G T T A C W-3'	ImHpHpPyPy-γ-ImHpPyPyPy
305)	5'-W G T T G T W-3'	ImHpHpImHp-γ-PyPyPyPyPy
306)	5'-W G T T G A W-3'	ImHpHpImPy-γ-HpPyPyPyPy
307)	5'-W G T T G G W-3'	ImHpHpImIm-γ-PyPyPyPyPy
308)	5'-W G T T G C W-3'	ImHpHpImPy-γ-ImPyPyPyPy
309)	5'-W G T T C T W-3'	ImHpHpPyHp-γ-PyImPyPyPy
310)	5'-W G T T C A W-3'	ImHpHpPyPy-γ-HpImPyPyPy
311)	5'-W G T T C G W-3'	ImHpHpPyIm-γ-PyImPyPyPy
312)	5'-W G T T C C W-3'	ImHpHpPyPy-γ-ImImPyPyPy
313)	5'-W G T A T T W-3'	ImHpPyHpHp-γ-PyPyHpPyPy
314)	5'-W G T A T A W-3'	ImHpPyHpPy-γ-HpPyHpPyPy
315)	5'-W G T A T G W-3'	ImHpPyHpIm-γ-PyPyHpPyPy
316)	5'-W G T A T C W-3'	ImHpPyHpPy-γ-ImPyHpPyPy
317)	5'-W G T A A T W-3'	ImHpPyPyHp-γ-PyHpHpPyPy
318)	5'-W G T A A A W-3'	ImHpPyPyPy-γ-HpHpHpPyPy
319)	5'-W G T A A G W-3'	ImHpPyPyIm-γ-PyHpHpPyPy
320)	5'-W G T A A C W-3'	ImHpPyPyPy-γ-ImHpHpPyPy
321)	5'-W G T A G T W-3'	ImHpPyImHp-γ-PyPyHpPyPy
322)	5'-W G T A G A W-3'	ImHpPyImPy-γ-HpPyHpPyPy
323)	5'-W G T A G G W-3'	ImHpPyImIm-γ-PyPyHpPyPy
324)	5'-W G T A G C W-3'	ImHpPyImPy-γ-ImPyHpPyPy
325)	5'-W G T A C T W-3'	ImHpPyPyHp-γ-PyImHpPyPy
326)	5'-W G T A C A W-3'	ImHpPyPyPy-γ-HpImHpPyPy
327)	5'-W G T A C G W-3'	ImHpPyPyIm-γ-PyImHpPyPy
328)	5'-W G T A C C W-3'	ImHpPyPyPy-γ-ImImHpPyPy

TABLE 23: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGTSNNW-3'

DNA sequence		aromatic amino acid sequence
329)	5'-W G T G T T W-3'	ImHpImHpHp- γ -PyPyPyPyPy
330)	5'-W G T G T A W-3'	ImHpImHpPy- γ -HpPyPyPyPy
331)	5'-W G T G T G W-3'	ImHpImHpIm- γ -PyPyPyPyPy
332)	5'-W G T G T C W-3'	ImHpImHpPy- γ -ImPyPyPyPy
333)	5'-W G T G A T W-3'	ImHpImPyHp- γ -PyHpPyPyPy
334)	5'-W G T G A A W-3'	ImHpImPyPy- γ -HpHpPyPyPy
335)	5'-W G T G A G W-3'	ImHpImPyIm- γ -PyHpPyPyPy
336)	5'-W G T G A C W-3'	ImHpImPyPy- γ -ImHpPyPyPy
337)	5'-W G T G G T W-3'	ImHpImImHp- γ -PyPyPyPyPy
338)	5'-W G T G G A W-3'	ImHpImImPy- γ -HpPyPyPyPy
339)	5'-W G T G C T W-3'	ImHpImPyHp- γ -PyImPyPyPy
340)	5'-W G T G C A W-3'	ImHpImPyPy- γ -HpImPyPyPy
341)	5'-W G T G G G W-3'	ImHpImImIm- γ -PyPyPyPyPy
342)	5'-W G T G G C W-3'	ImHpImImPy- γ -ImPyPyPyPy
343)	5'-W G T G C G W-3'	ImHpImPyIm- γ -PyImPyPyPy
344)	5'-W G T G C C W-3'	ImHpImPyPy- γ -ImImPyPyPy
345)	5'-W G T C T T W-3'	ImHpPyHpHp- γ -PyPyImPyPy
346)	5'-W G T C T A W-3'	ImHpPyHpPy- γ -HpPyImPyPy
347)	5'-W G T C T G W-3'	ImHpPyHpIm- γ -PyPyImPyPy
348)	5'-W G T C T C W-3'	ImHpPyHpPy- γ -ImPyImPyPy
349)	5'-W G T C A T W-3'	ImHpPyPyHp- γ -PyHpImPyPy
350)	5'-W G T C A A W-3'	ImHpPyPyPy- γ -HpHpImPyPy
351)	5'-W G T C A G W-3'	ImHpPyPyIm- γ -PyHpImPyPy
352)	5'-W G T C A C W-3'	ImHpPyPyPy- γ -ImHpImPyPy
353)	5'-W G T C G T W-3'	ImHpPyImHp- γ -PyPyImPyPy
354)	5'-W G T C G A W-3'	ImHpPyImPy- γ -HpPyImPyPy
355)	5'-W G T C C T W-3'	ImHpPyPyHp- γ -PyImImPyPy
356)	5'-W G T C C A W-3'	ImHpPyPyPy- γ -HpImImPyPy
357)	5'-W G T C G G W-3'	ImHpPyImIm- γ -PyPyImPyPy
358)	5'-W G T C G C W-3'	ImHpPyImPy- γ -ImPyImPyPy
359)	5'-W G T C C G W-3'	ImHpPyPyIm- γ -PyImImPyPy
360)	5'-W G T C C C W-3'	ImHpPyPyPy- γ -ImImImPyPy

TABLE 24: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGAWNNW-3'

DNA sequence		aromatic amino acid sequence
361)	5'-W G A T T T W-3'	ImPyHpHpHp- γ -PyPyPyHpPy
362)	5'-W G A T T A W-3'	ImPyHpHpPy- γ -HpPyPyHpPy
363)	5'-W G A T T G W-3'	ImPyHpHpIm- γ -PyPyPyHpPy
364)	5'-W G A T T C W-3'	ImPyHpHpPy- γ -ImPyPyHpPy
365)	5'-W G A T A T W-3'	ImPyHpPyHp- γ -PyHpPyHpPy
366)	5'-W G A T A A W-3'	ImPyHpPyPy- γ -HpHpPyHpPy
367)	5'-W G A T A G W-3'	ImPyHpPyIm- γ -PyHpPyHpPy
368)	5'-W G A T A C W-3'	ImPyHpPyPy- γ -ImHpPyHpPy
369)	5'-W G A T G T W-3'	ImPyHpImHp- γ -PyPyPyHpPy
370)	5'-W G A T G A W-3'	ImPyHpImPy- γ -HpPyPyHpPy
371)	5'-W G A T G G W-3'	ImPyHpImIm- γ -PyPyPyHpPy
372)	5'-W G A T G C W-3'	ImPyHpImPy- γ -ImPyPyHpPy
373)	5'-W G A T C T W-3'	ImPyHpPyHp- γ -PyImPyHpPy
374)	5'-W G A T C A W-3'	ImPyHpPyPy- γ -HpImPyHpPy
375)	5'-W G A T C G W-3'	ImPyHpPyIm- γ -PyImPyHpPy
376)	5'-W G A T C C W-3'	ImPyHpPyPy- γ -ImImPyHpPy
377)	5'-W G A A T T W-3'	ImPyPyHpHp- γ -PyPyHpHpPy
378)	5'-W G A A T A W-3'	ImPyPyHpPy- γ -HpPyHpHpPy
379)	5'-W G A A T G W-3'	ImPyPyHpIm- γ -PyPyHpHpPy
380)	5'-W G A A T C W-3'	ImPyPyHpPy- γ -ImPyHpHpPy
381)	5'-W G A A A T W-3'	ImPyPyPyHp- γ -PyHpHpHpPy
382)	5'-W G A A A A W-3'	ImPyPyPyPy- γ -HpHpHpHpPy
383)	5'-W G A A A G W-3'	ImPyPyPyIm- γ -PyHpHpHpPy
384)	5'-W G A A A C W-3'	ImPyPyPyPy- γ -ImHpHpHpPy
385)	5'-W G A A G T W-3'	ImPyPyImHp- γ -PyPyHpHpPy
386)	5'-W G A A G A W-3'	ImPyPyImPy- γ -HpPyHpHpPy
387)	5'-W G A A G G W-3'	ImPyPyImIm- γ -PyPyHpHpPy
388)	5'-W G A A G C W-3'	ImPyPyImPy- γ -ImPyHpHpPy
389)	5'-W G A A C T W-3'	ImPyPyPyHp- γ -PyImHpHpPy
390)	5'-W G A A C A W-3'	ImPyPyPyPy- γ -HpImHpHpPy
391)	5'-W G A A C G W-3'	ImPyPyPyIm- γ -PyImHpHpPy
392)	5'-W G A A C C W-3'	ImPyPyPyPy- γ -ImImHpHpPy

TABLE 25: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGASNNW-3'

DNA sequence		aromatic amino acid sequence
393)	5'-W G A G T T W-3'	ImPyImHpHp-γ-PyPyPyHpPy
394)	5'-W G A G T A W-3'	ImPyImHpPy-γ-HpPyPyHpPy
395)	5'-W G A G T G W-3'	ImPyImHpIm-γ-PyPyPyHpPy
396)	5'-W G A G T C W-3'	ImPyImHpPy-γ-ImPyPyHpPy
397)	5'-W G A G A T W-3'	ImPyImPyHp-γ-PyHpPyHpPy
398)	5'-W G A G A A W-3'	ImPyImPyPy-γ-HpHpPyHpPy
399)	5'-W G A G A G W-3'	ImPyImPyIm-γ-PyHpPyHpPy
400)	5'-W G A G A C W-3'	ImPyImPyPy-γ-ImHpPyHpPy
401)	5'-W G A G G T W-3'	ImPyImImHp-γ-PyPyPyHpPy
402)	5'-W G A G G A W-3'	ImPyImImPy-γ-HpPyPyHpPy
403)	5'-W G A G C T W-3'	ImPyImPyHp-γ-PyImPyHpPy
404)	5'-W G A G C A W-3'	ImPyImPyPy-γ-HpImPyHpPy
405)	5'-W G A G G G W-3'	ImPyImImIm-γ-PyPyPyHpPy
406)	5'-W G A G G C W-3'	ImPyImImPy-γ-ImPyPyHpPy
407)	5'-W G A G C G W-3'	ImPyImPyIm-γ-PyImPyHpPy
408)	5'-W G A G C C W-3'	ImPyImPyPy-γ-ImImPyHpPy
409)	5'-W G A C T T W-3'	ImPyPyHpHp-γ-PyPyImHpPy
410)	5'-W G A C T A W-3'	ImPyPyHpPy-γ-HpPyImHpPy
411)	5'-W G A C T G W-3'	ImPyPyHpIm-γ-PyPyImHpPy
412)	5'-W G A C T C W-3'	ImPyPyHpPy-γ-ImPyImHpPy
413)	5'-W G A C A T W-3'	ImPyPyPyHp-γ-PyHpImHpPy
414)	5'-W G A C A A W-3'	ImPyPyPyPy-γ-HpHpImHpPy
415)	5'-W G A C A G W-3'	ImPyPyPyIm-γ-PyHpImHpPy
416)	5'-W G A C A C W-3'	ImPyPyPyPy-γ-ImHpImHpPy
417)	5'-W G A C G T W-3'	ImPyPyImHp-γ-PyPyImHpPy
418)	5'-W G A C G A W-3'	ImPyPyImPy-γ-HpPyImHpPy
419)	5'-W G A C C T W-3'	ImPyPyPyHp-γ-PyImImHpPy
420)	5'-W G A C C A W-3'	ImPyPyPyPy-γ-HpImImHpPy
421)	5'-W G A C G G W-3'	ImPyPyImIm-γ-PyPyImHpPy
422)	5'-W G A C G C W-3'	ImPyPyImPy-γ-ImPyImHpPy
423)	5'-W G A C C G W-3'	ImPyPyPyIm-γ-PyImImHpPy
424)	5'-W G A C C C W-3'	ImPyPyPyPy-γ-ImImImHpPy

TABLE 26: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGCWNNW-3'

DNA sequence		aromatic amino acid sequence
425)	5'-W G C T T T W-3'	ImPyHpHpHp-γ-PyPyPyImPy
426)	5'-W G C T T A W-3'	ImPyHpHpPy-γ-HpPyPyImPy
427)	5'-W G C T T G W-3'	ImPyHpHpIm-γ-PyPyPyImPy
428)	5'-W G C T T C W-3'	ImPyHpHpPy-γ-ImPyPyImPy
429)	5'-W G C T A T W-3'	ImPyHpPyHp-γ-PyHpPyImPy
430)	5'-W G C T A A W-3'	ImPyHpPyPy-γ-HpHpPyImPy
431)	5'-W G C T A G W-3'	ImPyHpPyIm-γ-PyHpPyImPy
432)	5'-W G C T A C W-3'	ImPyHpPyPy-γ-ImHpPyImPy
433)	5'-W G C T G T W-3'	ImPyHpImHp-γ-PyPyPyImPy
434)	5'-W G C T G A W-3'	ImPyHpImPy-γ-HpPyPyImPy
435)	5'-W G C T G G W-3'	ImPyHpImIm-γ-PyPyPyImPy
436)	5'-W G C T G C W-3'	ImPyHpImPy-γ-ImPyPyImPy
437)	5'-W G C T C T W-3'	ImPyHpPyHp-γ-PyImPyImPy
438)	5'-W G C T C A W-3'	ImPyHpPyPy-γ-HpImPyImPy
439)	5'-W G C T C G W-3'	ImPyHpPyIm-γ-PyImPyImPy
440)	5'-W G C T C C W-3'	ImPyHpPyPy-γ-ImImPyImPy
441)	5'-W G C A T T W-3'	ImPyPyHpHp-γ-PyPyHpImPy
442)	5'-W G C A T A W-3'	ImPyPyHpPy-γ-HpPyHpImPy
443)	5'-W G C A T G W-3'	ImPyPyHpIm-γ-PyPyHpImPy
444)	5'-W G C A T C W-3'	ImPyPyHpPy-γ-ImPyHpImPy
445)	5'-W G C A A T W-3'	ImPyPyPyHp-γ-PyHpHpImPy
446)	5'-W G C A A A W-3'	ImPyPyPyPy-γ-HpHpHpImPy
447)	5'-W G C A A G W-3'	ImPyPyPyIm-γ-PyHpHpImPy
448)	5'-W G C A A C W-3'	ImPyPyPyPy-γ-ImHpHpImPy
449)	5'-W G C A G T W-3'	ImPyPyImHp-γ-PyPyHpImPy
450)	5'-W G C A G A W-3'	ImPyPyImPy-γ-HpPyHpImPy
451)	5'-W G C A G G W-3'	ImPyPyImIm-γ-PyPyHpImPy
452)	5'-W G C A G C W-3'	ImPyPyImPy-γ-ImPyHpImPy
453)	5'-W G C A C T W-3'	ImPyPyPyHp-γ-PyImHpImPy
454)	5'-W G C A C A W-3'	ImPyPyPyPy-γ-HpImHpImPy
455)	5'-W G C A C G W-3'	ImPyPyPyIm-γ-PyImHpImPy
456)	5'-W G C A C C W-3'	ImPyPyPyPy-γ-ImImHpImPy

TABLE 27: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGCSNNW-3'

	DNA sequence	aromatic amino acid sequence
	457) 5'-W G C G T T W-3'	ImPyImHpHp-γ-PyPyPyImPy
5	458) 5'-W G C G T A W-3'	ImPyImHpPy-γ-HpPyPyImPy
	459) 5'-W G C G T G W-3'	ImPyImHpIm-γ-PyPyPyImPy
	460) 5'-W G C G T C W-3'	ImPyImHpPy-γ-ImPyPyImPy
	461) 5'-W G C G A T W-3'	ImPyImPyHp-γ-PyHpPyImPy
	462) 5'-W G C G A A W-3'	ImPyImPyPy-γ-HpHpPyImPy
10	463) 5'-W G C G A G W-3'	ImPyImPyIm-γ-PyHpPyImPy
	464) 5'-W G C G A C W-3'	ImPyImPyPy-γ-ImHpPyImPy
	465) 5'-W G C G G T W-3'	ImPyImImHp-γ-PyPyPyImPy
	466) 5'-W G C G G A W-3'	ImPyImImPy-γ-HpPyPyImPy
	467) 5'-W G C G C T W-3'	ImPyImPyHp-γ-PyImPyImPy
	468) 5'-W G C G C A W-3'	ImPyImPyPy-γ-HpImPyImPy
	469) 5'-W G C C T T W-3'	ImPyPyHpHp-γ-PyPyImImPy
	470) 5'-W G C C T A W-3'	ImPyPyHpPy-γ-HpPyImImPy
	471) 5'-W G C C T G W-3'	ImPyPyHpIm-γ-PyPyImImPy
	472) 5'-W G C C T C W-3'	ImPyPyHpPy-γ-ImPyImImPy
20	473) 5'-W G C C A T W-3'	ImPyPyPyHp-γ-PyHpImImPy
	474) 5'-W G C C A A W-3'	ImPyPyPyPy-γ-HpHpImImPy
	475) 5'-W G C C A G W-3'	ImPyPyPyIm-γ-PyHpImImPy
	476) 5'-W G C C A C W-3'	ImPyPyPyPy-γ-ImHpImImPy
	477) 5'-W G C C G T W-3'	ImPyPyImHp-γ-PyPyImImPy
25	478) 5'-W G C C G A W-3'	ImPyPyImPy-γ-HpPyImImPy
	479) 5'-W G C C C T W-3'	ImPyPyPyHp-γ-PyImImImPy
	480) 5'-W G C C C A W-3'	ImPyPyPyPy-γ-HpImImImPy
	G25) 5'-W G C G G G W-3'	ImPyImImIm-γ-PyPyPyImPy
	G26) 5'-W G C G G C W-3'	ImPyImImPy-γ-ImPyPyImPy
30	G27) 5'-W G C G C G W-3'	ImPyImPyIm-γ-PyImPyImPy
	G28) 5'-W G C G C C W-3'	ImPyImPyPy-γ-ImImPyImPy
	G29) 5'-W G C C G G W-3'	ImPyPyImIm-γ-PyPyImImPy
	G30) 5'-W G C C G C W-3'	ImPyPyImPy-γ-ImPyImImPy
	G31) 5'-W G C C C G W-3'	ImPyPyPyIm-γ-PyImImImPy
35	G32) 5'-W G C C C C W-3'	ImPyPyPyPy-γ-ImImImImPy

TABLE 28: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCGWNNW-3'

DNA sequence		aromatic amino acid sequence
481)	5'-W C G T T T W-3'	PyImHpHpHp-γ-PyPyPyPyIm
482)	5'-W C G T T A W-3'	PyImHpHpPy-γ-HpPyPyPyIm
483)	5'-W C G T T G W-3'	PyImHpHpIm-γ-PyPyPyPyIm
484)	5'-W C G T T C W-3'	PyImHpHpPy-γ-ImPyPyPyIm
485)	5'-W C G T A T W-3'	PyImHpPyHp-γ-PyHpPyPyIm
486)	5'-W C G T A A W-3'	PyImHpPyPy-γ-HpHpPyPyIm
487)	5'-W C G T A G W-3'	PyImHpPyIm-γ-PyHpPyPyIm
488)	5'-W C G T A C W-3'	PyImHpPyPy-γ-ImHpPyPyIm
489)	5'-W C G T G T W-3'	PyImHpImHp-γ-PyPyPyPyIm
490)	5'-W C G T G A W-3'	PyImHpImPy-γ-HpPyPyPyIm
491)	5'-W C G T G G W-3'	PyImHpImIm-γ-PyPyPyPyIm
492)	5'-W C G T G C W-3'	PyImHpImPy-γ-ImPyPyPyIm
493)	5'-W C G T C T W-3'	PyImHpPyHp-γ-PyImPyPyIm
494)	5'-W C G T C A W-3'	PyImHpPyPy-γ-HpImPyPyIm
495)	5'-W C G T C G W-3'	PyImHpPyIm-γ-PyImPyPyIm
496)	5'-W C G T C C W-3'	PyImHpPyPy-γ-ImImPyPyIm
497)	5'-W C G A T T W-3'	PyImPyHpHp-γ-PyPyHpPyIm
498)	5'-W C G A T A W-3'	PyImPyHpPy-γ-HpPyHpPyIm
499)	5'-W C G A T G W-3'	PyImPyHpIm-γ-PyPyHpPyIm
500)	5'-W C G A T C W-3'	PyImPyHpPy-γ-ImPyHpPyIm
501)	5'-W C G A A T W-3'	PyImPyPyHp-γ-PyHpHpPyIm
502)	5'-W C G A A A W-3'	PyImPyPyPy-γ-HpHpHpPyIm
503)	5'-W C G A A G W-3'	PyImPyPyIm-γ-PyHpHpPyIm
504)	5'-W C G A A C W-3'	PyImPyPyPy-γ-ImHpHpPyIm
505)	5'-W C G A G T W-3'	PyImPyImHp-γ-PyPyHpPyIm
506)	5'-W C G A G A W-3'	PyImPyImPy-γ-HpPyHpPyIm
507)	5'-W C G A G G W-3'	PyImPyImIm-γ-PyPyHpPyIm
508)	5'-W C G A G C W-3'	PyImPyImPy-γ-ImPyHpPyIm
509)	5'-W C G A C T W-3'	PyImPyPyHp-γ-PyImHpPyIm
510)	5'-W C G A C A W-3'	PyImPyPyPy-γ-HpImHpPyIm
511)	5'-W C G A C G W-3'	PyImPyPyIm-γ-PyImHpPyIm
512)	5'-W C G A C C W-3'	PyImPyPyPy-γ-ImImHpPyIm

TABLE 29: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCGSNNW-3'

	DNA sequence	aromatic amino acid sequence
	513) 5'-W C G G T T W-3'	PyImImHpHp- γ -PyPyPyPyIm
5	514) 5'-W C G G T A W-3'	PyImImHpPy- γ -HpPyPyPyIm
	515) 5'-W C G G T G W-3'	PyImImHpIm- γ -PyPyPyPyIm
	516) 5'-W C G G T C W-3'	PyImImHpPy- γ -ImPyPyPyIm
	517) 5'-W C G G A T W-3'	PyImImPyHp- γ -PyHpPyPyIm
	518) 5'-W C G G A A W-3'	PyImImPyPy- γ -HpHpPyPyIm
10	519) 5'-W C G G A G W-3'	PyImImPyIm- γ -PyHpPyPyIm
	520) 5'-W C G G A C W-3'	PyImImPyPy- γ -ImHpPyPyIm
	521) 5'-W C G G G T W-3'	PyImImImHp- γ -PyPyPyPyIm
	522) 5'-W C G G G A W-3'	PyImImImPy- γ -HpPyPyPyIm
	523) 5'-W C G G C T W-3'	PyImImPyHp- γ -PyImPyPyIm
15	524) 5'-W C G G C A W-3'	PyImImPyPy- γ -HpImPyPyIm
	525) 5'-W C G C T T W-3'	PyImPyHpHp- γ -PyPyImPyIm
	526) 5'-W C G C T A W-3'	PyImPyHpPy- γ -HpPyImPyIm
	527) 5'-W C G C T G W-3'	PyImPyHpIm- γ -PyPyImPyIm
	528) 5'-W C G C T C W-3'	PyImPyHpPy- γ -ImPyImPyIm
20	529) 5'-W C G C A T W-3'	PyImPyPyHp- γ -PyHpImPyIm
	530) 5'-W C G C A A W-3'	PyImPyPyPy- γ -HpHpImPyIm
	531) 5'-W C G C A G W-3'	PyImPyPyIm- γ -PyHpImPyIm
	532) 5'-W C G C A C W-3'	PyImPyPyPy- γ -ImHpImPyIm
	533) 5'-W C G C G T W-3'	PyImPyImHp- γ -PyPyImPyIm
25	534) 5'-W C G C G A W-3'	PyImPyImPy- γ -HpPyImPyIm
	535) 5'-W C G C C T W-3'	PyImPyPyHp- γ -PyImImPyIm
	536) 5'-W C G C C A W-3'	PyImPyPyPy- γ -HpImImPyIm
	G33) 5'-W C G G G G W-3'	PyImImImIm- γ -PyPyPyPyIm
	G34) 5'-W C G G G C W-3'	PyImImImPy- γ -ImPyPyPyIm
30	G35) 5'-W C G G C G W-3'	PyImImPyIm- γ -PyImPyPyIm
	G36) 5'-W C G G C C W-3'	PyImImPyPy- γ -ImImPyPyIm
	G37) 5'-W C G C G G W-3'	PyImPyImIm- γ -PyPyImPyIm
	G38) 5'-W C G C G C W-3'	PyImPyImPy- γ -ImPyImPyIm
	G39) 5'-W C G C C G W-3'	PyImPyPyIm- γ -PyImImPyIm
35	G40) 5'-W C G C C C W-3'	PyImPyPyPy- γ -ImImImPyIm

TABLE 30: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCTWNNW-3'

	DNA sequence	aromatic amino acid sequence
537)	5'-W C T T T T W-3'	PyHpHpHpHp- γ -PyPyPyPyIm
538)	5'-W C T T T A W-3'	PyHpHpHpPy- γ -HpPyPyPyIm
539)	5'-W C T T T G W-3'	PyHpHpHpIm- γ -PyPyPyPyIm
540)	5'-W C T T T C W-3'	PyHpHpHpPy- γ -ImPyPyPyIm
541)	5'-W C T T A T W-3'	PyHpHpPyHp- γ -PyHpPyPyIm
542)	5'-W C T T A A W-3'	PyHpHpPyPy- γ -HpHpPyPyIm
543)	5'-W C T T A G W-3'	PyHpHpPyIm- γ -PyHpPyPyIm
544)	5'-W C T T A C W-3'	PyHpHpPyPy- γ -ImHpPyPyIm
545)	5'-W C T T G T W-3'	PyHpHpImHp- γ -PyPyPyPyIm
546)	5'-W C T T G A W-3'	PyHpHpImPy- γ -HpPyPyPyIm
547)	5'-W C T T G G W-3'	PyHpHpImIm- γ -PyPyPyPyIm
548)	5'-W C T T G C W-3'	PyHpHpImPy- γ -ImPyPyPyIm
549)	5'-W C T T C T W-3'	PyHpHpPyHp- γ -PyImPyPyIm
550)	5'-W C T T C A W-3'	PyHpHpPyPy- γ -HpImPyPyIm
551)	5'-W C T T C G W-3'	PyHpHpPyIm- γ -PyImPyPyIm
552)	5'-W C T T C C W-3'	PyHpHpPyPy- γ -ImImPyPyIm
553)	5'-W C T A T T W-3'	PyHpPyHpHp- γ -PyPyHpPyIm
554)	5'-W C T A T A W-3'	PyHpPyHpPy- γ -HpPyHpPyIm
555)	5'-W C T A T G W-3'	PyHpPyHpIm- γ -PyPyHpPyIm
556)	5'-W C T A T C W-3'	PyHpPyHpPy- γ -ImPyHpPyIm
557)	5'-W C T A A T W-3'	PyHpPyPyHp- γ -PyHpHpPyIm
558)	5'-W C T A A A W-3'	PyHpPyPyPy- γ -HpHpHpPyIm
559)	5'-W C T A A G W-3'	PyHpPyPyIm- γ -PyHpHpPyIm
560)	5'-W C T A A C W-3'	PyHpPyPyPy- γ -ImHpHpPyIm
561)	5'-W C T A G T W-3'	PyHpPyImHp- γ -PyPyHpPyIm
562)	5'-W C T A G A W-3'	PyHpPyImPy- γ -HpPyHpPyIm
563)	5'-W C T A G G W-3'	PyHpPyImIm- γ -PyPyHpPyIm
564)	5'-W C T A G C W-3'	PyHpPyImPy- γ -ImPyHpPyIm
565)	5'-W C T A C T W-3'	PyHpPyPyHp- γ -PyImHpPyIm
566)	5'-W C T A C A W-3'	PyHpPyPyPy- γ -HpImHpPyIm
567)	5'-W C T A C G W-3'	PyHpPyPyIm- γ -PyImHpPyIm
568)	5'-W C T A C C W-3'	PyHpPyPyPy- γ -ImImHpPyIm

TABLE 31: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCTSNNW-3'

DNA sequence		aromatic amino acid sequence
569)	5'-W C T G T T W-3'	PyHpImHpHp- γ -PyPyPyPyIm
570)	5'-W C T G T A W-3'	PyHpImHpPy- γ -HpPyPyPyIm
571)	5'-W C T G T G W-3'	PyHpImHpIm- γ -PyPyPyPyIm
572)	5'-W C T G T C W-3'	PyHpImHpPy- γ -ImPyPyPyIm
573)	5'-W C T G A T W-3'	PyHpImPyHp- γ -PyHpPyPyIm
574)	5'-W C T G A A W-3'	PyHpImPyPy- γ -HpHpPyPyIm
575)	5'-W C T G A G W-3'	PyHpImPyIm- γ -PyHpPyPyIm
576)	5'-W C T G A C W-3'	PyHpImPyPy- γ -ImHpPyPyIm
577)	5'-W C T G G T W-3'	PyHpImImHp- γ -PyPyPyPyIm
578)	5'-W C T G G A W-3'	PyHpImImPy- γ -HpPyPyPyIm
579)	5'-W C T G C T W-3'	PyHpImPyHp- γ -PyImPyPyIm
580)	5'-W C T G C A W-3'	PyHpImPyPy- γ -HpImPyPyIm
581)	5'-W C T G G G W-3'	PyHpImImIm- γ -PyPyPyPyIm
582)	5'-W C T G G C W-3'	PyHpImImPy- γ -ImPyPyPyIm
583)	5'-W C T G C G W-3'	PyHpImPyIm- γ -PyImPyPyIm
584)	5'-W C T G C C W-3'	PyHpImPyPy- γ -ImImPyPyIm
585)	5'-W C T C T T W-3'	PyHpPyHpHp- γ -PyPyImPyIm
586)	5'-W C T C T A W-3'	PyHpPyHpPy- γ -HpPyImPyIm
587)	5'-W C T C T G W-3'	PyHpPyHpIm- γ -PyPyImPyIm
588)	5'-W C T C T C W-3'	PyHpPyHpPy- γ -ImPyImPyIm
589)	5'-W C T C A T W-3'	PyHpPyPyHp- γ -PyHpImPyIm
590)	5'-W C T C A A W-3'	PyHpPyPyPy- γ -HpHpImPyIm
591)	5'-W C T C A G W-3'	PyHpPyPyIm- γ -PyHpImPyIm
592)	5'-W C T C A C W-3'	PyHpPyPyPy- γ -ImHpImPyIm
593)	5'-W C T C G T W-3'	PyHpPyImHp- γ -PyPyImPyIm
594)	5'-W C T C G A W-3'	PyHpPyImPy- γ -HpPyImPyIm
595)	5'-W C T C C T W-3'	PyHpPyPyHp- γ -PyImImPyIm
596)	5'-W C T C C A W-3'	PyHpPyPyPy- γ -HpImImPyIm
597)	5'-W C T C G G W-3'	PyHpPyImIm- γ -PyPyImPyIm
598)	5'-W C T C G C W-3'	PyHpPyImPy- γ -ImPyImPyIm
599)	5'-W C T C C G W-3'	PyHpPyPyIm- γ -PyImImPyIm
600)	5'-W C T C C C W-3'	PyHpPyPyPy- γ -ImImImPyIm

TABLE 32: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCAWNNW-3'

DNA sequence		aromatic amino acid sequence
601)	5'-W C A T T T W-3'	PyPyHpHpHp-γ-PyPyPyHpIm
602)	5'-W C A T T A W-3'	PyPyHpHpPy-γ-HpPyPyHpIm
603)	5'-W C A T T G W-3'	PyPyHpHpIm-γ-PyPyPyHpIm
604)	5'-W C A T T C W-3'	PyPyHpHpPy-γ-ImPyPyHpIm
605)	5'-W C A T A T W-3'	PyPyHpPyHp-γ-PyHpPyHpIm
606)	5'-W C A T A A W-3'	PyPyHpPyPy-γ-HpHpPyHpIm
607)	5'-W C A T A G W-3'	PyPyHpPyIm-γ-PyHpPyHpIm
608)	5'-W C A T A C W-3'	PyPyHpPyPy-γ-ImHpPyHpIm
609)	5'-W C A T G T W-3'	PyPyHpImHp-γ-PyPyPyHpIm
610)	5'-W C A T G A W-3'	PyPyHpImPy-γ-HpPyPyHpIm
611)	5'-W C A T G G W-3'	PyPyHpImIm-γ-PyPyPyHpIm
612)	5'-W C A T G C W-3'	PyPyHpImPy-γ-ImPyPyHpIm
613)	5'-W C A T C T W-3'	PyPyHpPyHp-γ-PyImPyHpIm
614)	5'-W C A T C A W-3'	PyPyHpPyPy-γ-HpImPyHpIm
615)	5'-W C A T C G W-3'	PyPyHpPyIm-γ-PyImPyHpIm
616)	5'-W C A T C C W-3'	PyPyHpPyPy-γ-ImImPyHpIm
617)	5'-W C A A T T W-3'	PyPyPyHpHp-γ-PyPyHpHpIm
618)	5'-W C A A T A W-3'	PyPyPyHpPy-γ-HpPyHpHpIm
619)	5'-W C A A T G W-3'	PyPyPyHpIm-γ-PyPyHpHpIm
620)	5'-W C A A T C W-3'	PyPyPyHpPy-γ-ImPyHpHpIm
621)	5'-W C A A A T W-3'	PyPyPyPyHp-γ-PyHpHpHpIm
622)	5'-W C A A A A W-3'	PyPyPyPyPy-γ-HpHpHpHpIm
623)	5'-W C A A A G W-3'	PyPyPyPyIm-γ-PyHpHpHpIm
624)	5'-W C A A A C W-3'	PyPyPyPyPy-γ-ImHpHpHpIm
625)	5'-W C A A G T W-3'	PyPyPyImHp-γ-PyPyHpHpIm
626)	5'-W C A A G A W-3'	PyPyPyImPy-γ-HpPyHpHpIm
627)	5'-W C A A G G W-3'	PyPyPyImIm-γ-PyPyHpHpIm
628)	5'-W C A A G C W-3'	PyPyPyImPy-γ-ImPyHpHpIm
629)	5'-W C A A C T W-3'	PyPyPyPyHp-γ-PyImHpHpIm
630)	5'-W C A A C A W-3'	PyPyPyPyPy-γ-HpImHpHpIm
631)	5'-W C A A C G W-3'	PyPyPyPyIm-γ-PyImHpHpIm
632)	5'-W C A A C C W-3'	PyPyPyPyPy-γ-ImImHpHpIm

TABLE 33: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCASNNW-3'

DNA sequence		aromatic amino acid sequence
633)	5'-W C A G T T W-3'	PyPyImHpHp-γ-PyPyPyHpIm
634)	5'-W C A G T A W-3'	PyPyImHpPy-γ-HpPyPyHpIm
635)	5'-W C A G T G W-3'	PyPyImHpIm-γ-PyPyPyHpIm
636)	5'-W C A G T C W-3'	PyPyImHpPy-γ-ImPyPyHpIm
637)	5'-W C A G A T W-3'	PyPyImPyHp-γ-PyHpPyHpIm
638)	5'-W C A G A A W-3'	PyPyImPyPy-γ-HpHpPyHpIm
639)	5'-W C A G A G W-3'	PyPyImPyIm-γ-PyHpPyHpIm
640)	5'-W C A G A C W-3'	PyPyImPyPy-γ-ImHpPyHpIm
641)	5'-W C A G G T W-3'	PyPyImImHp-γ-PyPyPyHpIm
642)	5'-W C A G G A W-3'	PyPyImImPy-γ-HpPyPyHpIm
643)	5'-W C A G C T W-3'	PyPyImPyHp-γ-PyImPyHpIm
644)	5'-W C A G C A W-3'	PyPyImPyPy-γ-HpImPyHpIm
645)	5'-W C A G G G W-3'	PyPyImImIm-γ-PyPyPyHpIm
646)	5'-W C A G G C W-3'	PyPyImImPy-γ-ImPyPyHpIm
647)	5'-W C A G C G W-3'	PyPyImPyIm-γ-PyImPyHpIm
648)	5'-W C A G C C W-3'	PyPyImPyPy-γ-ImImPyHpIm
649)	5'-W C A C T T W-3'	PyPyPyHpHp-γ-PyPyImHpIm
650)	5'-W C A C T A W-3'	PyPyPyHpPy-γ-HpPyImHpIm
651)	5'-W C A C T G W-3'	PyPyPyHpIm-γ-PyPyImHpIm
652)	5'-W C A C T C W-3'	PyPyPyHpPy-γ-ImPyImHpIm
653)	5'-W C A C A T W-3'	PyPyPyPyHp-γ-PyHpImHpIm
654)	5'-W C A C A A W-3'	PyPyPyPyPy-γ-HpHpImHpIm
655)	5'-W C A C A G W-3'	PyPyPyPyIm-γ-PyHpImHpIm
656)	5'-W C A C A C W-3'	PyPyPyPyPy-γ-ImHpImHpIm
657)	5'-W C A C G T W-3'	PyPyPyImHp-γ-PyPyImHpIm
658)	5'-W C A C G A W-3'	PyPyPyImPy-γ-HpPyImHpIm
659)	5'-W C A C C T W-3'	PyPyPyPyHp-γ-PyImImHpIm
660)	5'-W C A C C A W-3'	PyPyPyPyPy-γ-HpImImHpIm
661)	5'-W C A C G G W-3'	PyPyPyImIm-γ-PyPyImHpIm
662)	5'-W C A C G C W-3'	PyPyPyImPy-γ-ImPyImHpIm
663)	5'-W C A C C G W-3'	PyPyPyPyIm-γ-PyImImHpIm
664)	5'-W C A C C C W-3'	PyPyPyPyPy-γ-ImImImHpIm

TABLE 34: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCCWNNW-3'

	DNA sequence	aromatic amino acid sequence
5	665) 5'-W C C T T T W-3'	PyPyHpHpHp-γ-PyPyPyImIm
	666) 5'-W C C T T A W-3'	PyPyHpHpPy-γ-HpPyPyImIm
	667) 5'-W C C T T G W-3'	PyPyHpHpIm-γ-PyPyPyImIm
	668) 5'-W C C T T C W-3'	PyPyHpHpPy-γ-ImPyPyImIm
	669) 5'-W C C T A T W-3'	PyPyHpPyHp-γ-PyHpPyImIm
10	670) 5'-W C C T A A W-3'	PyPyHpPyPy-γ-HpHpPyImIm
	671) 5'-W C C T A G W-3'	PyPyHpPyIm-γ-PyHpPyImIm
	672) 5'-W C C T A C W-3'	PyPyHpPyPy-γ-ImHpPyImIm
	673) 5'-W C C T G T W-3'	PyPyHpImHp-γ-PyPyPyImIm
	674) 5'-W C C T G A W-3'	PyPyHpImPy-γ-HpPyPyImIm
	675) 5'-W C C T G G W-3'	PyPyHpImIm-γ-PyPyPyImIm
	676) 5'-W C C T G C W-3'	PyPyHpImPy-γ-ImPyPyImIm
	677) 5'-W C C T C T W-3'	PyPyHpPyHp-γ-PyImPyImIm
	678) 5'-W C C T C A W-3'	PyPyHpPyPy-γ-HpImPyImIm
	679) 5'-W C C T C G W-3'	PyPyHpPyIm-γ-PyImPyImIm
20	680) 5'-W C C T C C W-3'	PyPyHpPyPy-γ-ImImPyImIm
	681) 5'-W C C A T T W-3'	PyPyPyHpHp-γ-PyPyHpImIm
	682) 5'-W C C A T A W-3'	PyPyPyHpPy-γ-HpPyHpImIm
	683) 5'-W C C A T G W-3'	PyPyPyHpIm-γ-PyPyHpImIm
	684) 5'-W C C A T C W-3'	PyPyPyHpPy-γ-ImPyHpImIm
	685) 5'-W C C A A T W-3'	PyPyPyPyHp-γ-PyHpHpImIm
	686) 5'-W C C A A A W-3'	PyPyPyPyPy-γ-HpHpHpImIm
	687) 5'-W C C A A G W-3'	PyPyPyPyIm-γ-PyHpHpImIm
	688) 5'-W C C A A C W-3'	PyPyPyPyPy-γ-ImHpHpImIm
	689) 5'-W C C A G T W-3'	PyPyPyImHp-γ-PyPyHpImIm
30	690) 5'-W C C A G A W-3'	PyPyPyImPy-γ-HpPyHpImIm
	691) 5'-W C C A G G W-3'	PyPyPyImIm-γ-PyPyHpImIm
	692) 5'-W C C A G C W-3'	PyPyPyImPy-γ-ImPyHpImIm
	693) 5'-W C C A C T W-3'	PyPyPyPyHp-γ-PyImHpImIm
	694) 5'-W C C A C A W-3'	PyPyPyPyPy-γ-HpImHpImIm
	695) 5'-W C C A C G W-3'	PyPyPyPyIm-γ-PyImHpImIm
35	696) 5'-W C C A C C W-3'	PyPyPyPyPy-γ-ImImHpImIm

TABLE 35: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCCSNNW-3'

	DNA sequence	aromatic amino acid sequence
5	697) 5'-W C C G T T W-3'	PyPyImHpHp-γ-PyPyPyImIm
	698) 5'-W C C G T A W-3'	PyPyImHpPy-γ-HpPyPyImIm
	699) 5'-W C C G T G W-3'	PyPyImHpIm-γ-PyPyPyImIm
	700) 5'-W C C G T C W-3'	PyPyImHpPy-γ-ImPyPyImIm
	701) 5'-W C C G A T W-3'	PyPyImPyHp-γ-PyHpPyImIm
10	702) 5'-W C C G A A W-3'	PyPyImPyPy-γ-HpHpPyImIm
	703) 5'-W C C G A G W-3'	PyPyImPyIm-γ-PyHpPyImIm
	704) 5'-W C C G A C W-3'	PyPyImPyPy-γ-ImHpPyImIm
	705) 5'-W C C G G T W-3'	PyPyImImHp-γ-PyPyPyImIm
	706) 5'-W C C G G A W-3'	PyPyImImPy-γ-HpPyPyImIm
	707) 5'-W C C G C T W-3'	PyPyImPyHp-γ-PyImPyImIm
	708) 5'-W C C G C A W-3'	PyPyImPyPy-γ-HpImPyImIm
	709) 5'-W C C C T T W-3'	PyPyPyHpHp-γ-PyPyImImIm
	710) 5'-W C C C T A W-3'	PyPyPyHpPy-γ-HpPyImImIm
	711) 5'-W C C C T G W-3'	PyPyPyHpIm-γ-PyPyImImIm
20	712) 5'-W C C C T C W-3'	PyPyPyHpPy-γ-ImPyImImIm
	713) 5'-W C C C A T W-3'	PyPyPyPyHp-γ-PyHpImImIm
	714) 5'-W C C C A A W-3'	PyPyPyPyPy-γ-HpHpImImIm
	715) 5'-W C C C A G W-3'	PyPyPyPyIm-γ-PyHpImImIm
	716) 5'-W C C C A C W-3'	PyPyPyPyPy-γ-ImHpImImIm
	717) 5'-W C C C G T W-3'	PyPyPyImHp-γ-PyPyImImIm
25	718) 5'-W C C C G A W-3'	PyPyPyImPy-γ-HpPyImImIm
	719) 5'-W C C C C T W-3'	PyPyPyPyHp-γ-PyImImImIm
	720) 5'-W C C C C A W-3'	PyPyPyPyPy-γ-HpImImImIm
	G41) 5'-W C C G G G W-3'	PyPyImImIm-γ-PyPyPyImIm
	G42) 5'-W C C G G C W-3'	PyPyImImPy-γ-ImPyPyImIm
30	G43) 5'-W C C G C G W-3'	PyPyImPyIm-γ-PyImPyImIm
	G44) 5'-W C C G C C W-3'	PyPyImPyPy-γ-ImImPyImIm
	G45) 5'-W C C C G G W-3'	PyPyPyImIm-γ-PyPyImImIm
	G46) 5'-W C C C G C W-3'	PyPyPyImPy-γ-ImPyImImIm
	G47) 5'-W C C C C G W-3'	PyPyPyPyIm-γ-PyImImImIm
35	G48) 5'-W C C C C C W-3'	PyPyPyPyPy-γ-ImImImImIm

TABLE 36: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WAGWNNW-3'

	DNA sequence	aromatic amino acid sequence
5	721) 5'-W A G T T T W-3'	PyImHpHpHp-γ-PyPyPyPyHp
	722) 5'-W A G T T A W-3'	PyImHpHpPy-γ-HpPyPyPyHp
	723) 5'-W A G T T G W-3'	PyImHpHpIm-γ-PyPyPyPyHp
	724) 5'-W A G T T C W-3'	PyImHpHpPy-γ-ImPyPyPyHp
	725) 5'-W A G T A T W-3'	PyImHpPyHp-γ-PyHpPyPyHp
	726) 5'-W A G T A A W-3'	PyImHpPyPy-γ-HpHpPyPyHp
10	727) 5'-W A G T A G W-3'	PyImHpPyIm-γ-PyHpPyPyHp
	728) 5'-W A G T A C W-3'	PyImHpPyPy-γ-ImHpPyPyHp
	729) 5'-W A G T G T W-3'	PyImHpImHp-γ-PyPyPyPyHp
	730) 5'-W A G T G A W-3'	PyImHpImPy-γ-HpPyPyPyHp
	731) 5'-W A G T G G W-3'	PyImHpImIm-γ-PyPyPyPyHp
	732) 5'-W A G T G C W-3'	PyImHpImPy-γ-ImPyPyPyHp
	733) 5'-W A G T C T W-3'	PyImHpPyHp-γ-PyImPyPyHp
	734) 5'-W A G T C A W-3'	PyImHpPyPy-γ-HpImPyPyHp
	735) 5'-W A G T C G W-3'	PyImHpPyIm-γ-PyImPyPyHp
	736) 5'-W A G T C C W-3'	PyImHpPyPy-γ-ImImPyPyHp
	737) 5'-W A G A T T W-3'	PyImPyHpHp-γ-PyPyHpPyHp
	738) 5'-W A G A T A W-3'	PyImPyHpPy-γ-HpPyHpPyHp
	739) 5'-W A G A T G W-3'	PyImPyHpIm-γ-PyPyHpPyHp
	740) 5'-W A G A T C W-3'	PyImPyHpPy-γ-ImPyHpPyHp
	741) 5'-W A G A A T W-3'	PyImPyPyHp-γ-PyHpHpPyHp
25	742) 5'-W A G A A A W-3'	PyImPyPyPy-γ-HpHpHpPyHp
	743) 5'-W A G A A G W-3'	PyImPyPyIm-γ-PyHpHpPyHp
	744) 5'-W A G A A C W-3'	PyImPyPyPy-γ-ImHpHpPyHp
	745) 5'-W A G A G T W-3'	PyImPyImHp-γ-PyPyHpPyHp
	746) 5'-W A G A G A W-3'	PyImPyImPy-γ-HpPyHpPyHp
30	747) 5'-W A G A G G W-3'	PyImPyImIm-γ-PyPyHpPyHp
	748) 5'-W A G A G C W-3'	PyImPyImPy-γ-ImPyHpPyHp
	749) 5'-W A G A C T W-3'	PyImPyPyHp-γ-PyImHpPyHp
	750) 5'-W A G A C A W-3'	PyImPyPyPy-γ-HpImHpPyHp
	751) 5'-W A G A C G W-3'	PyImPyPyIm-γ-PyImHpPyHp
35	752) 5'-W A G A C C W-3'	PyImPyPyPy-γ-ImImHpPyHp

TABLE 37: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WAGSNNW-3'

DNA sequence		aromatic amino acid sequence
5	753) 5'-W A G G T T W-3'	PyImImHpHp-γ-PyPyPyPyHp
	754) 5'-W A G G T A W-3'	PyImImHpPy-γ-HpPyPyPyHp
	755) 5'-W A G G T G W-3'	PyImImHpIm-γ-PyPyPyPyHp
	756) 5'-W A G G T C W-3'	PyImImHpPy-γ-ImPyPyPyHp
	757) 5'-W A G G A T W-3'	PyImImPyHp-γ-PyHpPyPyHp
10	758) 5'-W A G G A A W-3'	PyImImPyPy-γ-HpHpPyPyHp
	759) 5'-W A G G A G W-3'	PyImImPyIm-γ-PyHpPyPyHp
	760) 5'-W A G G A C W-3'	PyImImPyPy-γ-ImHpPyPyHp
	761) 5'-W A G G G T W-3'	PyImImImHp-γ-PyPyPyPyHp
	762) 5'-W A G G G A W-3'	PyImImImPy-γ-HpPyPyPyHp
	763) 5'-W A G G C T W-3'	PyImImPyHp-γ-PyImPyPyHp
	764) 5'-W A G G C A W-3'	PyImImPyPy-γ-HpImPyPyHp
	765) 5'-W A G C T T W-3'	PyImPyHpHp-γ-PyPyImPyHp
	766) 5'-W A G C T A W-3'	PyImPyHpPy-γ-HpPyImPyHp
	767) 5'-W A G C T G W-3'	PyImPyHpIm-γ-PyPyImPyHp
20	768) 5'-W A G C T C W-3'	PyImPyHpPy-γ-ImPyImPyHp
	769) 5'-W A G C A T W-3'	PyImPyPyHp-γ-PyHpImPyHp
	770) 5'-W A G C A A W-3'	PyImPyPyPy-γ-HpHpImPyHp
	771) 5'-W A G C A G W-3'	PyImPyPyIm-γ-PyHpImPyHp
	772) 5'-W A G C A C W-3'	PyImPyPyPy-γ-ImHpImPyHp
	773) 5'-W A G C G T W-3'	PyImPyImHp-γ-PyPyImPyHp
	774) 5'-W A G C G A W-3'	PyImPyImPy-γ-HpPyImPyHp
	775) 5'-W A G C C T W-3'	PyImPyPyHp-γ-PyImImPyHp
	776) 5'-W A G C C A W-3'	PyImPyPyPy-γ-HpImImPyHp
	777) 5'-W A G G G G W-3'	PyImImImIm-γ-PyPyPyPyHp
30	778) 5'-W A G G G C W-3'	PyImImImPy-γ-ImPyPyPyHp
	779) 5'-W A G G C G W-3'	PyImImPyIm-γ-PyImPyPyHp
	780) 5'-W A G G C C W-3'	PyImImPyPy-γ-ImImPyPyHp
	781) 5'-W A G C G G W-3'	PyImPyImIm-γ-PyPyImPyHp
	782) 5'-W A G C G C W-3'	PyImPyImPy-γ-ImPyImPyHp
	783) 5'-W A G C C G W-3'	PyImPyPyIm-γ-PyImImPyHp
	784) 5'-W A G C C C W-3'	PyImPyPyPy-γ-ImImImPyHp

TABLE 38: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WATWNNW-3'

	DNA sequence	aromatic amino acid sequence
5	785) 5'-W A T T T T W-3'	PyHrHrHrHr-γ-PyPyPyPyHr
	786) 5'-W A T T T A W-3'	PyHrHrHrPy-γ-HrPyPyPyHr
	787) 5'-W A T T T G W-3'	PyHrHrHrIm-γ-PyPyPyPyHr
	788) 5'-W A T T T C W-3'	PyHrHrHrPy-γ-ImPyPyPyHr
	789) 5'-W A T T A T W-3'	PyHrHrPyHr-γ-PyHrPyPyHr
	790) 5'-W A T T A A W-3'	PyHrHrPyPy-γ-HrHrPyPyHr
10	791) 5'-W A T T A G W-3'	PyHrHrPyIm-γ-PyHrPyPyHr
	792) 5'-W A T T A C W-3'	PyHrHrPyPy-γ-ImHrPyPyHr
	793) 5'-W A T T G T W-3'	PyHrHrImHr-γ-PyPyPyPyHr
	794) 5'-W A T T G A W-3'	PyHrHrImPy-γ-HrPyPyPyHr
	795) 5'-W A T T G G W-3'	PyHrHrImIm-γ-PyPyPyPyHr
	796) 5'-W A T T G C W-3'	PyHrHrImPy-γ-ImPyPyPyHr
	797) 5'-W A T T C T W-3'	PyHrHrPyHr-γ-PyImPyPyHr
	798) 5'-W A T T C A W-3'	PyHrHrPyPy-γ-HrImPyPyHr
	799) 5'-W A T T C G W-3'	PyHrHrPyIm-γ-PyImPyPyHr
	800) 5'-W A T T C C W-3'	PyHrHrPyPy-γ-ImImPyPyHr
20	801) 5'-W A T A T T W-3'	PyHrPyHrHr-γ-PyPyHrPyHr
	802) 5'-W A T A T A W-3'	PyHrPyHrPy-γ-HrPyHrPyHr
	803) 5'-W A T A T G W-3'	PyHrPyHrIm-γ-PyPyHrPyHr
	804) 5'-W A T A T C W-3'	PyHrPyHrPy-γ-ImPyHrPyHr
	805) 5'-W A T A A T W-3'	PyHrPyPyHr-γ-PyHrHrPyHr
25	806) 5'-W A T A A A W-3'	PyHrPyPyPy-γ-HrHrHrPyHr
	807) 5'-W A T A A G W-3'	PyHrPyPyIm-γ-PyHrHrPyHr
	808) 5'-W A T A A C W-3'	PyHrPyPyPy-γ-ImHrHrPyHr
	809) 5'-W A T A G T W-3'	PyHrPyImHr-γ-PyPyHrPyHr
	810) 5'-W A T A G A W-3'	PyHrPyImPy-γ-HrPyHrPyHr
30	811) 5'-W A T A G G W-3'	PyHrPyImIm-γ-PyPyHrPyHr
	812) 5'-W A T A G C W-3'	PyHrPyImPy-γ-ImPyHrPyHr
	813) 5'-W A T A C T W-3'	PyHrPyPyHr-γ-PyImHrPyHr
	814) 5'-W A T A C A W-3'	PyHrPyPyPy-γ-HrImHrPyHr
	815) 5'-W A T A C G W-3'	PyHrPyPyIm-γ-PyImHrPyHr
35	816) 5'-W A T A C C W-3'	PyHrPyPyPy-γ-ImImHrPyHr

TABLE 39: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WATSNW-3'

DNA sequence		aromatic amino acid sequence
5	817) 5'-W A T G T T W-3'	PyHpImHpHp-γ-PyPyPyPyHp
	818) 5'-W A T G T A W-3'	PyHpImHpPy-γ-HpPyPyPyHp
	819) 5'-W A T G T G W-3'	PyHpImHpIm-γ-PyPyPyPyHp
	820) 5'-W A T G T C W-3'	PyHpImHpPy-γ-ImPyPyPyHp
	821) 5'-W A T G A T W-3'	PyHpImPyHp-γ-PyHpPyPyHp
	822) 5'-W A T G A A W-3'	PyHpImPyPy-γ-HpHpPyPyHp
10	823) 5'-W A T G A G W-3'	PyHpImPyIm-γ-PyHpPyPyHp
	824) 5'-W A T G A C W-3'	PyHpImPyPy-γ-ImHpPyPyHp
	825) 5'-W A T G G T W-3'	PyHpImImHp-γ-PyPyPyPyHp
	826) 5'-W A T G G A W-3'	PyHpImImPy-γ-HpPyPyPyHp
	827) 5'-W A T G C T W-3'	PyHpImPyHp-γ-PyImPyPyHp
	828) 5'-W A T G C A W-3'	PyHpImPyPy-γ-HpImPyPyHp
	829) 5'-W A T G G G W-3'	PyHpImImIm-γ-PyPyPyPyHp
	830) 5'-W A T G G C W-3'	PyHpImImPy-γ-ImPyPyPyHp
	831) 5'-W A T G C G W-3'	PyHpImPyIm-γ-PyImPyPyHp
	832) 5'-W A T G C C W-3'	PyHpImPyPy-γ-ImImPyPyHp
20	833) 5'-W A T C T T W-3'	PyHpPyHpHp-γ-PyPyImPyHp
	834) 5'-W A T C T A W-3'	PyHpPyHpPy-γ-HpPyImPyHp
	835) 5'-W A T C T G W-3'	PyHpPyHpIm-γ-PyPyImPyHp
	836) 5'-W A T C T C W-3'	PyHpPyHpPy-γ-ImPyImPyHp
	837) 5'-W A T C A T W-3'	PyHpPyPyHp-γ-PyHpImPyHp
25	838) 5'-W A T C A A W-3'	PyHpPyPyPy-γ-HpHpImPyHp
	839) 5'-W A T C A G W-3'	PyHpPyPyIm-γ-PyHpImPyHp
	840) 5'-W A T C A C W-3'	PyHpPyPyPy-γ-ImHpImPyHp
	841) 5'-W A T C G T W-3'	PyHpPyImHp-γ-PyPyImPyHp
	842) 5'-W A T C G A W-3'	PyHpPyImPy-γ-HpPyImPyHp
30	843) 5'-W A T C C T W-3'	PyHpPyPyHp-γ-PyImImPyHp
	844) 5'-W A T C C A W-3'	PyHpPyPyPy-γ-HpImImPyHp
	845) 5'-W A T C G G W-3'	PyHpPyImIm-γ-PyPyImPyHp
	846) 5'-W A T C G C W-3'	PyHpPyImPy-γ-ImPyImPyHp
	847) 5'-W A T C C G W-3'	PyHpPyPyIm-γ-PyImImPyHp
35	848) 5'-W A T C C C W-3'	PyHpPyPyPy-γ-ImImImPyHp

TABLE 40: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WAAWNNW-3'

	DNA sequence	aromatic amino acid sequence
5	849) 5'-W A A T T T W-3'	PyPyHrHrHr-γ-PyPyPyHrHr
	850) 5'-W A A T T A W-3'	PyPyHrHrPy-γ-HrPyPyHrHr
	851) 5'-W A A T T G W-3'	PyPyHrHrIm-γ-PyPyPyHrHr
	852) 5'-W A A T T C W-3'	PyPyHrHrPy-γ-ImPyPyHrHr
	853) 5'-W A A T A T W-3'	PyPyHrPyHr-γ-PyHrPyHrHr
	854) 5'-W A A T A A W-3'	PyPyHrPyPy-γ-HrHrPyHrHr
10	855) 5'-W A A T A G W-3'	PyPyHrPyIm-γ-PyHrPyHrHr
	856) 5'-W A A T A C W-3'	PyPyHrPyPy-γ-ImHrPyHrHr
	857) 5'-W A A T G T W-3'	PyPyHrImHr-γ-PyPyPyHrHr
	858) 5'-W A A T G A W-3'	PyPyHrImPy-γ-HrPyPyHrHr
	859) 5'-W A A T G G W-3'	PyPyHrImIm-γ-PyPyPyHrHr
	860) 5'-W A A T G C W-3'	PyPyHrImPy-γ-ImPyPyHrHr
	861) 5'-W A A T C T W-3'	PyPyHrPyHr-γ-PyImPyHrHr
	862) 5'-W A A T C A W-3'	PyPyHrPyPy-γ-HrImPyHrHr
	863) 5'-W A A T C G W-3'	PyPyHrPyIm-γ-PyImPyHrHr
	864) 5'-W A A T C C W-3'	PyPyHrPyPy-γ-ImImPyHrHr
20	865) 5'-W A A A T T W-3'	PyPyPyHrHr-γ-PyPyHrHrHr
	866) 5'-W A A A T A W-3'	PyPyPyHrPy-γ-HrPyHrHrHr
	867) 5'-W A A A T G W-3'	PyPyPyHrIm-γ-PyPyHrHrHr
	868) 5'-W A A A T C W-3'	PyPyPyHrPy-γ-ImPyHrHrHr
	869) 5'-W A A A A T W-3'	PyPyPyPyHr-γ-PyHrHrHrHr
25	870) 5'-W A A A A A W-3'	PyPyPyPyPy-γ-HrHrHrHrHr
	871) 5'-W A A A A G W-3'	PyPyPyPyIm-γ-PyHrHrHrHr
	872) 5'-W A A A A C W-3'	PyPyPyPyPy-γ-ImHrHrHrHr
	873) 5'-W A A A G T W-3'	PyPyPyImHr-γ-PyPyHrHrHr
	874) 5'-W A A A G A W-3'	PyPyPyImPy-γ-HrPyHrHrHr
30	875) 5'-W A A A G G W-3'	PyPyPyImIm-γ-PyPyHrHrHr
	876) 5'-W A A A G C W-3'	PyPyPyImPy-γ-ImPyHrHrHr
	877) 5'-W A A A C T W-3'	PyPyPyPyHr-γ-PyImHrHrHr
	878) 5'-W A A A C A W-3'	PyPyPyPyPy-γ-HrImHrHrHr
	879) 5'-W A A A C G W-3'	PyPyPyPyIm-γ-PyImHrHrHr
35	880) 5'-W A A A C C W-3'	PyPyPyPyPy-γ-ImImHrHrHr

TABLE 41: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WAASNNW-3'

DNA sequence		aromatic amino acid sequence
881)	5'-W A A G T T W-3'	PyPyImHpHp-γ-PyPyPyHpHp
882)	5'-W A A G T A W-3'	PyPyImHpPy-γ-HpPyPyHpHp
883)	5'-W A A G T G W-3'	PyPyImHpIm-γ-PyPyPyHpHp
884)	5'-W A A G T C W-3'	PyPyImHpPy-γ-ImPyPyHpHp
885)	5'-W A A G A T W-3'	PyPyImPyHp-γ-PyHpPyHpHp
886)	5'-W A A G A A W-3'	PyPyImPyPy-γ-HpHpPyHpHp
887)	5'-W A A G A G W-3'	PyPyImPyIm-γ-PyHpPyHpHp
888)	5'-W A A G A C W-3'	PyPyImPyPy-γ-ImHpPyHpHp
889)	5'-W A A G G T W-3'	PyPyImImHp-γ-PyPyPyHpHp
890)	5'-W A A G G A W-3'	PyPyImImPy-γ-HpPyPyHpHp
891)	5'-W A A G C T W-3'	PyPyImPyHp-γ-PyImPyHpHp
892)	5'-W A A G C A W-3'	PyPyImPyPy-γ-HpImPyHpHp
893)	5'-W A A G G G W-3'	PyPyImImIm-γ-PyPyPyHpHp
894)	5'-W A A G G C W-3'	PyPyImImPy-γ-ImPyPyHpHp
895)	5'-W A A G C G W-3'	PyPyImPyIm-γ-PyImPyHpHp
896)	5'-W A A G C C W-3'	PyPyImPyPy-γ-ImImPyHpHp
897)	5'-W A A C T T W-3'	PyPyPyHpHp-γ-PyPyImHpHp
898)	5'-W A A C T A W-3'	PyPyPyHpPy-γ-HpPyImHpHp
899)	5'-W A A C T G W-3'	PyPyPyHpIm-γ-PyPyImHpHp
900)	5'-W A A C T C W-3'	PyPyPyHpPy-γ-ImPyImHpHp
901)	5'-W A A C A T W-3'	PyPyPyPyHp-γ-PyHpImHpHp
902)	5'-W A A C A A W-3'	PyPyPyPyPy-γ-HpHpImHpHp
903)	5'-W A A C A G W-3'	PyPyPyPyIm-γ-PyHpImHpHp
904)	5'-W A A C A C W-3'	PyPyPyPyPy-γ-ImHpImHpHp
905)	5'-W A A C G T W-3'	PyPyPyImHp-γ-PyPyImHpHp
906)	5'-W A A C G A W-3'	PyPyPyImPy-γ-HpPyImHpHp
907)	5'-W A A C C T W-3'	PyPyPyPyHp-γ-PyImImHpHp
908)	5'-W A A C C A W-3'	PyPyPyPyPy-γ-HpImImHpHp
909)	5'-W A A C G G W-3'	PyPyPyImIm-γ-PyPyImHpHp
910)	5'-W A A C G C W-3'	PyPyPyImPy-γ-ImPyImHpHp
911)	5'-W A A C C G W-3'	PyPyPyPyIm-γ-PyImImHpHp
912)	5'-W A A C C C W-3'	PyPyPyPyPy-γ-ImImImHpHp

TABLE 42: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WACWNNW-3'

DNA sequence		aromatic amino acid sequence
913)	5'-W A C T T T W-3'	PyPyHpHpHp-γ-PyPyPyImHp
914)	5'-W A C T T A W-3'	PyPyHpHpPy-γ-HpPyPyImHp
915)	5'-W A C T T G W-3'	PyPyHpHpIm-γ-PyPyPyImHp
916)	5'-W A C T T C W-3'	PyPyHpHpPy-γ-ImPyPyImHp
917)	5'-W A C T A T W-3'	PyPyHpPyHp-γ-PyHpPyImHp
918)	5'-W A C T A A W-3'	PyPyHpPyPy-γ-HpHpPyImHp
919)	5'-W A C T A G W-3'	PyPyHpPyIm-γ-PyHpPyImHp
920)	5'-W A C T A C W-3'	PyPyHpPyPy-γ-ImHpPyImHp
921)	5'-W A C T G T W-3'	PyPyHpImHp-γ-PyPyPyImHp
922)	5'-W A C T G A W-3'	PyPyHpImPy-γ-HpPyPyImHp
923)	5'-W A C T G G W-3'	PyPyHpImIm-γ-PyPyPyImHp
924)	5'-W A C T G C W-3'	PyPyHpImPy-γ-ImPyPyImHp
925)	5'-W A C T C T W-3'	PyPyHpPyHp-γ-PyImPyImHp
926)	5'-W A C T C A W-3'	PyPyHpPyPy-γ-HpImPyImHp
927)	5'-W A C T C G W-3'	PyPyHpPyIm-γ-PyImPyImHp
928)	5'-W A C T C C W-3'	PyPyHpPyPy-γ-ImImPyImHp
929)	5'-W A C A T T W-3'	PyPyPyHpHp-γ-PyPyHpImHp
930)	5'-W A C A T A W-3'	PyPyPyHpPy-γ-HpPyHpImHp
931)	5'-W A C A T G W-3'	PyPyPyHpIm-γ-PyPyHpImHp
932)	5'-W A C A T C W-3'	PyPyPyHpPy-γ-ImPyHpImHp
933)	5'-W A C A A T W-3'	PyPyPyPyHp-γ-PyHpHpImHp
934)	5'-W A C A A A W-3'	PyPyPyPyPy-γ-HpHpHpImHp
935)	5'-W A C A A G W-3'	PyPyPyPyIm-γ-PyHpHpImHp
936)	5'-W A C A A C W-3'	PyPyPyPyPy-γ-ImHpHpImHp
937)	5'-W A C A G T W-3'	PyPyPyImHp-γ-PyPyHpImHp
938)	5'-W A C A G A W-3'	PyPyPyImPy-γ-HpPyHpImHp
939)	5'-W A C A G G W-3'	PyPyPyImIm-γ-PyPyHpImHp
940)	5'-W A C A G C W-3'	PyPyPyImPy-γ-ImPyHpImHp
941)	5'-W A C A C T W-3'	PyPyPyPyHp-γ-PyImHpImHp
942)	5'-W A C A C A W-3'	PyPyPyPyPy-γ-HpImHpImHp
943)	5'-W A C A C G W-3'	PyPyPyPyIm-γ-PyImHpImHp
944)	5'-W A C A C C W-3'	PyPyPyPyPy-γ-ImImHpImHp

TABLE 43: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WACSNW-3'

DNA sequence		aromatic amino acid sequence
5	945) 5'-W A C G T T W-3'	PyPyImHpHp-γ-PyPyPyImHp
	946) 5'-W A C G T A W-3'	PyPyImHpPy-γ-HpPyPyImHp
	947) 5'-W A C G T G W-3'	PyPyImHpIm-γ-PyPyPyImHp
	948) 5'-W A C G T C W-3'	PyPyImHpPy-γ-ImPyPyImHp
	949) 5'-W A C G A T W-3'	PyPyImPyHp-γ-PyHpPyImHp
10	950) 5'-W A C G A A W-3'	PyPyImPyPy-γ-HpHpPyImHp
	951) 5'-W A C G A G W-3'	PyPyImPyIm-γ-PyHpPyImHp
	952) 5'-W A C G A C W-3'	PyPyImPyPy-γ-ImHpPyImHp
	953) 5'-W A C G G T W-3'	PyPyImImHp-γ-PyPyPyImHp
	954) 5'-W A C G G A W-3'	PyPyImImPy-γ-HpPyPyImHp
	955) 5'-W A C G C T W-3'	PyPyImPyHp-γ-PyImPyImHp
	956) 5'-W A C G C A W-3'	PyPyImPyPy-γ-HpImPyImHp
	957) 5'-W A C C T T W-3'	PyPyPyHpHp-γ-PyPyImImHp
	958) 5'-W A C C T A W-3'	PyPyPyHpPy-γ-HpPyImImHp
	959) 5'-W A C C T G W-3'	PyPyPyHpIm-γ-PyPyImImHp
	960) 5'-W A C C T C W-3'	PyPyPyHpPy-γ-ImPyImImHp
20	961) 5'-W A C C A T W-3'	PyPyPyPyHp-γ-PyHpImImHp
	962) 5'-W A C C A A W-3'	PyPyPyPyPy-γ-HpHpImImHp
	963) 5'-W A C C A G W-3'	PyPyPyPyIm-γ-PyHpImImHp
	964) 5'-W A C C A C W-3'	PyPyPyPyPy-γ-ImHpImImHp
25	965) 5'-W A C C G T W-3'	PyPyPyImHp-γ-PyPyImImHp
	966) 5'-W A C C G A W-3'	PyPyPyImPy-γ-HpPyImImHp
	967) 5'-W A C C C T W-3'	PyPyPyPyHp-γ-PyImImImHp
	968) 5'-W A C C C A W-3'	PyPyPyPyPy-γ-HpImImImHp
	969) 5'-W A C G G G W-3'	PyPyImImIm-γ-PyPyPyImHp
	970) 5'-W A C G G C W-3'	PyPyImImPy-γ-ImPyPyImHp
30	971) 5'-W A C G C G W-3'	PyPyImPyIm-γ-PyImPyImHp
	972) 5'-W A C G C C W-3'	PyPyImPyPy-γ-ImImPyImHp
	973) 5'-W A C C G G W-3'	PyPyPyImIm-γ-PyPyImImHp
	974) 5'-W A C C G C W-3'	PyPyPyImPy-γ-ImPyImImHp
	975) 5'-W A C C C G W-3'	PyPyPyPyIm-γ-PyImImImHp
35	976) 5'-W A C C C C W-3'	PyPyPyPyPy-γ-ImImImImHp

TABLE 44: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTGWNNW-3'

DNA sequence		aromatic amino acid sequence
5	977) 5'-W T G T T T W-3'	HpImHpHpHp-γ-PyPyPyPyPy
	978) 5'-W T G T T A W-3'	HpImHpHpPy-γ-HpPyPyPyPy
	979) 5'-W T G T T G W-3'	HpImHpHpIm-γ-PyPyPyPyPy
	980) 5'-W T G T T C W-3'	HpImHpHpPy-γ-ImPyPyPyPy
	981) 5'-W T G T A T W-3'	HpImHpPyHp-γ-PyHpPyPyPy
	982) 5'-W T G T A A W-3'	HpImHpPyPy-γ-HpHpPyPyPy
10	983) 5'-W T G T A G W-3'	HpImHpPyIm-γ-PyHpPyPyPy
	984) 5'-W T G T A C W-3'	HpImHpPyPy-γ-ImHpPyPyPy
	985) 5'-W T G T G T W-3'	HpImHpImHp-γ-PyPyPyPyPy
	986) 5'-W T G T G A W-3'	HpImHpImPy-γ-HpPyPyPyPy
	987) 5'-W T G T G G W-3'	HpImHpImIm-γ-PyPyPyPyPy
	988) 5'-W T G T G C W-3'	HpImHpImPy-γ-ImPyPyPyPy
	989) 5'-W T G T C T W-3'	HpImHpPyHp-γ-PyImPyPyPy
	990) 5'-W T G T C A W-3'	HpImHpPyPy-γ-HpImPyPyPy
	991) 5'-W T G T C G W-3'	HpImHpPyIm-γ-PyImPyPyPy
	992) 5'-W T G T C C W-3'	HpImHpPyPy-γ-ImImPyPyPy
20	993) 5'-W T G A T T W-3'	HpImPyHpHp-γ-PyPyHpPyPy
	994) 5'-W T G A T A W-3'	HpImPyHpPy-γ-HpPyHpPyPy
	995) 5'-W T G A T G W-3'	HpImPyHpIm-γ-PyPyHpPyPy
	996) 5'-W T G A T C W-3'	HpImPyHpPy-γ-ImPyHpPyPy
	997) 5'-W T G A A T W-3'	HpImPyPyHp-γ-PyHpHpPyPy
25	998) 5'-W T G A A A W-3'	HpImPyPyPy-γ-HpHpHpPyPy
	999) 5'-W T G A A G W-3'	HpImPyPyIm-γ-PyHpHpPyPy
	1000) 5'-W T G A A C W-3'	HpImPyPyPy-γ-ImHpHpPyPy
	1001) 5'-W T G A G T W-3'	HpImPyImHp-γ-PyPyHpPyPy
	1002) 5'-W T G A G A W-3'	HpImPyImPy-γ-HpPyHpPyPy
30	1003) 5'-W T G A G G W-3'	HpImPyImIm-γ-PyPyHpPyPy
	1004) 5'-W T G A G C W-3'	HpImPyImPy-γ-ImPyHpPyPy
	1005) 5'-W T G A C T W-3'	HpImPyPyHp-γ-PyImHpPyPy
	1006) 5'-W T G A C A W-3'	HpImPyPyPy-γ-HpImHpPyPy
	1007) 5'-W T G A C G W-3'	HpImPyPyIm-γ-PyImHpPyPy
35	1008) 5'-W T G A C C W-3'	HpImPyPyPy-γ-ImImHpPyPy

TABLE 45: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTGSNNW-3'

DNA sequence		aromatic amino acid sequence
1009)	5'-W T G G T T W-3'	HpImImHpHp-γ-PyPyPyPyPy
1010)	5'-W T G G T A W-3'	HpImImHpPy-γ-HpPyPyPyPy
1011)	5'-W T G G T G W-3'	HpImImHpIm-γ-PyPyPyPyPy
1012)	5'-W T G G T C W-3'	HpImImHpPy-γ-ImPyPyPyPy
1013)	5'-W T G G A T W-3'	HpImImPyHp-γ-PyHpPyPyPy
1014)	5'-W T G G A A W-3'	HpImImPyPy-γ-HpHpPyPyPy
1015)	5'-W T G G A G W-3'	HpImImPyIm-γ-PyHpPyPyPy
1016)	5'-W T G G A C W-3'	HpImImPyPy-γ-ImHpPyPyPy
1017)	5'-W T G G G T W-3'	HpImImImHp-γ-PyPyPyPyPy
1018)	5'-W T G G G A W-3'	HpImImImPy-γ-HpPyPyPyPy
1019)	5'-W T G G C T W-3'	HpImImPyHp-γ-PyImPyPyPy
1020)	5'-W T G G C A W-3'	HpImImPyPy-γ-HpImPyPyPy
1021)	5'-W T G C T T W-3'	HpImPyHpHp-γ-PyPyImPyPy
1022)	5'-W T G C T A W-3'	HpImPyHpPy-γ-HpPyImPyPy
1023)	5'-W T G C T G W-3'	HpImPyHpIm-γ-PyPyImPyPy
1024)	5'-W T G C T C W-3'	HpImPyHpPy-γ-ImPyImPyPy
1025)	5'-W T G C A T W-3'	HpImPyPyHp-γ-PyHpImPyPy
1026)	5'-W T G C A A W-3'	HpImPyPyPy-γ-HpHpImPyPy
1027)	5'-W T G C A G W-3'	HpImPyPyIm-γ-PyHpImPyPy
1028)	5'-W T G C A C W-3'	HpImPyPyPy-γ-ImHpImPyPy
1029)	5'-W T G C G T W-3'	HpImPyImHp-γ-PyPyImPyPy
1030)	5'-W T G C G A W-3'	HpImPyImPy-γ-HpPyImPyPy
1031)	5'-W T G C C T W-3'	HpImPyPyHp-γ-PyImImPyPy
1032)	5'-W T G C C A W-3'	HpImPyPyPy-γ-HpImImPyPy
1033)	5'-W T G G G G W-3'	HpImImImIm-γ-PyPyPyPyPy
1034)	5'-W T G G G C W-3'	HpImImImPy-γ-ImPyPyPyPy
1035)	5'-W T G G C G W-3'	HpImImPyIm-γ-PyImPyPyPy
1036)	5'-W T G G C C W-3'	HpImImPyPy-γ-ImImPyPyPy
1037)	5'-W T G C G G W-3'	HpImPyImIm-γ-PyPyImPyPy
1038)	5'-W T G C G C W-3'	HpImPyImPy-γ-ImPyImPyPy
1039)	5'-W T G C C G W-3'	HpImPyPyIm-γ-PyImImPyPy
1040)	5'-W T G C C C W-3'	HpImPyPyPy-γ-ImImImPyPy

TABLE 46: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTTWNNW-3'

DNA sequence		aromatic amino acid sequence
1041)	5'-W T T T T T W-3'	HpHpHpHpHp-γ-PyPyPyPyPy
1042)	5'-W T T T T A W-3'	HpHpHpHpPy-γ-HpPyPyPyPy
1043)	5'-W T T T T G W-3'	HpHpHpHpIm-γ-PyPyPyPyPy
1044)	5'-W T T T T C W-3'	HpHpHpHpPy-γ-ImPyPyPyPy
1045)	5'-W T T T A T W-3'	HpHpHpPyHp-γ-PyHpPyPyPy
1046)	5'-W T T T A A W-3'	HpHpHpPyPy-γ-HpHpPyPyPy
1047)	5'-W T T T A G W-3'	HpHpHpPyIm-γ-PyHpPyPyPy
1048)	5'-W T T T A C W-3'	HpHpHpPyPy-γ-ImHpPyPyPy
1049)	5'-W T T T G T W-3'	HpHpHpImHp-γ-PyPyPyPyPy
1050)	5'-W T T T G A W-3'	HpHpHpImPy-γ-HpPyPyPyPy
1051)	5'-W T T T G G W-3'	HpHpHpImIm-γ-PyPyPyPyPy
1052)	5'-W T T T G C W-3'	HpHpHpImPy-γ-ImPyPyPyPy
1053)	5'-W T T T C T W-3'	HpHpHpPyHp-γ-PyImPyPyPy
1054)	5'-W T T T C A W-3'	HpHpHpPyPy-γ-HpImPyPyPy
1055)	5'-W T T T C G W-3'	HpHpHpPyIm-γ-PyImPyPyPy
1056)	5'-W T T T C C W-3'	HpHpHpPyPy-γ-ImImPyPyPy
1057)	5'-W T T A T T W-3'	HpHpPyHpHp-γ-PyPyHpPyPy
1058)	5'-W T T A T A W-3'	HpHpPyHpPy-γ-HpPyHpPyPy
1059)	5'-W T T A T G W-3'	HpHpPyHpIm-γ-PyPyHpPyPy
1060)	5'-W T T A T C W-3'	HpHpPyHpPy-γ-ImPyHpPyPy
1061)	5'-W T T A A T W-3'	HpHpPyPyHp-γ-PyHpHpPyPy
1062)	5'-W T T A A A W-3'	HpHpPyPyPy-γ-HpHpHpPyPy
1063)	5'-W T T A A G W-3'	HpHpPyPyIm-γ-PyHpHpPyPy
1064)	5'-W T T A A C W-3'	HpHpPyPyPy-γ-ImHpHpPyPy
1065)	5'-W T T A G T W-3'	HpHpPyImHp-γ-PyPyHpPyPy
1066)	5'-W T T A G A W-3'	HpHpPyImPy-γ-HpPyHpPyPy
1067)	5'-W T T A G G W-3'	HpHpPyImIm-γ-PyPyHpPyPy
1068)	5'-W T T A G C W-3'	HpHpPyImPy-γ-ImPyHpPyPy
1069)	5'-W T T A C T W-3'	HpHpPyPyHp-γ-PyImHpPyPy
1070)	5'-W T T A C A W-3'	HpHpPyPyPy-γ-HpImHpPyPy
1071)	5'-W T T A C G W-3'	HpHpPyPyIm-γ-PyImHpPyPy
1072)	5'-W T T A C C W-3'	HpHpPyPyPy-γ-ImImHpPyPy

TABLE 47: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTTSNW-3'

DNA sequence		aromatic amino acid sequence
1073)	5'-W T T G T T W-3'	HpHpImHpHp-γ-PyPyPyPyPy
1074)	5'-W T T G T A W-3'	HpHpImHpPy-γ-HpPyPyPyPy
1075)	5'-W T T G T G W-3'	HpHpImHpIm-γ-PyPyPyPyPy
1076)	5'-W T T G T C W-3'	HpHpImHpPy-γ-ImPyPyPyPy
1077)	5'-W T T G A T W-3'	HpHpImPyHp-γ-PyHpPyPyPy
1078)	5'-W T T G A A W-3'	HpHpImPyPy-γ-HpHpPyPyPy
1079)	5'-W T T G A G W-3'	HpHpImPyIm-γ-PyHpPyPyPy
1080)	5'-W T T G A C W-3'	HpHpImPyPy-γ-ImHpPyPyPy
1081)	5'-W T T G G T W-3'	HpHpImImHp-γ-PyPyPyPyPy
1082)	5'-W T T G G A W-3'	HpHpImImPy-γ-HpPyPyPyPy
1083)	5'-W T T G C T W-3'	HpHpImPyHp-γ-PyImPyPyPy
1084)	5'-W T T G C A W-3'	HpHpImPyPy-γ-HpImPyPyPy
1085)	5'-W T T G G G W-3'	HpHpImImIm-γ-PyPyPyPyPy
1086)	5'-W T T G G C W-3'	HpHpImImPy-γ-ImPyPyPyPy
1087)	5'-W T T G C G W-3'	HpHpImPyIm-γ-PyImPyPyPy
1088)	5'-W T T G C C W-3'	HpHpImPyPy-γ-ImImPyPyPy
1089)	5'-W T T C T T W-3'	HpHpPyHpHp-γ-PyPyImPyPy
1090)	5'-W T T C T A W-3'	HpHpPyHpPy-γ-HpPyImPyPy
1091)	5'-W T T C T G W-3'	HpHpPyHpIm-γ-PyPyImPyPy
1092)	5'-W T T C T C W-3'	HpHpPyHpPy-γ-ImPyImPyPy
1093)	5'-W T T C A T W-3'	HpHpPyPyHp-γ-PyHpImPyPy
1094)	5'-W T T C A A W-3'	HpHpPyPyPy-γ-HpHpImPyPy
1095)	5'-W T T C A G W-3'	HpHpPyPyIm-γ-PyHpImPyPy
1096)	5'-W T T C A C W-3'	HpHpPyPyPy-γ-ImHpImPyPy
1097)	5'-W T T C G T W-3'	HpHpPyImHp-γ-PyPyImPyPy
1098)	5'-W T T C G A W-3'	HpHpPyImPy-γ-HpPyImPyPy
1099)	5'-W T T C C T W-3'	HpHpPyPyHp-γ-PyImImPyPy
1100)	5'-W T T C C A W-3'	HpHpPyPyPy-γ-HpImImPyPy
1101)	5'-W T T C G G W-3'	HpHpPyImIm-γ-PyPyImPyPy
1102)	5'-W T T C G C W-3'	HpHpPyImPy-γ-ImPyImPyPy
1103)	5'-W T T C C G W-3'	HpHpPyPyIm-γ-PyImImPyPy
1104)	5'-W T T C C C W-3'	HpHpPyPyPy-γ-ImImImPyPy

TABLE 48: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTAWNNW-3'

DNA sequence		aromatic amino acid sequence
5	1105) 5'-W T A T T T W-3'	HpPyHpHpHp-γ-PyPyPyHpPy
	1106) 5'-W T A T T A W-3'	HpPyHpHpPy-γ-HpPyPyHpPy
	1107) 5'-W T A T T G W-3'	HpPyHpHpIm-γ-PyPyPyHpPy
	1108) 5'-W T A T T C W-3'	HpPyHpHpPy-γ-ImPyPyHpPy
	1109) 5'-W T A T A T W-3'	HpPyHpPyHp-γ-PyHpPyHpPy
	1110) 5'-W T A T A A W-3'	HpPyHpPyPy-γ-HpHpPyHpPy
10	1111) 5'-W T A T A G W-3'	HpPyHpPyIm-γ-PyHpPyHpPy
	1112) 5'-W T A T A C W-3'	HpPyHpPyPy-γ-ImHpPyHpPy
	1113) 5'-W T A T G T W-3'	HpPyHpImHp-γ-PyPyPyHpPy
	1114) 5'-W T A T G A W-3'	HpPyHpImPy-γ-HpPyPyHpPy
	1115) 5'-W T A T G G W-3'	HpPyHpImIm-γ-PyPyPyHpPy
	1116) 5'-W T A T G C W-3'	HpPyHpImPy-γ-ImPyPyHpPy
	1117) 5'-W T A T C T W-3'	HpPyHpPyHp-γ-PyImPyHpPy
	1118) 5'-W T A T C A W-3'	HpPyHpPyPy-γ-HpImPyHpPy
	1119) 5'-W T A T C G W-3'	HpPyHpPyIm-γ-PyImPyHpPy
	1120) 5'-W T A T C C W-3'	HpPyHpPyPy-γ-ImImPyHpPy
20	1121) 5'-W T A A T T W-3'	HpPyPyHpHp-γ-PyPyHpHpPy
	1122) 5'-W T A A T A W-3'	HpPyPyHpPy-γ-HpPyHpHpPy
	1123) 5'-W T A A T G W-3'	HpPyPyHpIm-γ-PyPyHpHpPy
	1124) 5'-W T A A T C W-3'	HpPyPyHpPy-γ-ImPyHpHpPy
	1125) 5'-W T A A A T W-3'	HpPyPyPyHp-γ-PyHpHpHpPy
25	1126) 5'-W T A A A A W-3'	HpPyPyPyPy-γ-HpHpHpHpPy
	1127) 5'-W T A A A G W-3'	HpPyPyPyIm-γ-PyHpHpHpPy
	1128) 5'-W T A A A C W-3'	HpPyPyPyPy-γ-ImHpHpHpPy
	1129) 5'-W T A A G T W-3'	HpPyPyImHp-γ-PyPyHpHpPy
	1130) 5'-W T A A G A W-3'	HpPyPyImPy-γ-HpPyHpHpPy
30	1131) 5'-W T A A G G W-3'	HpPyPyImIm-γ-PyPyHpHpPy
	1132) 5'-W T A A G C W-3'	HpPyPyImPy-γ-ImPyHpHpPy
	1133) 5'-W T A A C T W-3'	HpPyPyPyHp-γ-PyImHpHpPy
	1134) 5'-W T A A C A W-3'	HpPyPyPyPy-γ-HpImHpHpPy
	1135) 5'-W T A A C G W-3'	HpPyPyPyIm-γ-PyImHpHpPy
35	1136) 5'-W T A A C C W-3'	HpPyPyPyPy-γ-ImImHpHpPy

TABLE 49: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTASNNW-3'

DNA sequence		aromatic amino acid sequence
1137)	5'-W T A G T T W-3'	HpPyImHpHp-γ-PyPyPyHpPy
1138)	5'-W T A G T A W-3'	HpPyImHpPy-γ-HpPyPyHpPy
1139)	5'-W T A G T G W-3'	HpPyImHpIm-γ-PyPyPyHpPy
1140)	5'-W T A G T C W-3'	HpPyImHpPy-γ-ImPyPyHpPy
1141)	5'-W T A G A T W-3'	HpPyImPyHp-γ-PyHpPyHpPy
1142)	5'-W T A G A A W-3'	HpPyImPyPy-γ-HpHpPyHpPy
1143)	5'-W T A G A G W-3'	HpPyImPyIm-γ-PyHpPyHpPy
1144)	5'-W T A G A C W-3'	HpPyImPyPy-γ-ImHpPyHpPy
1145)	5'-W T A G G T W-3'	HpPyImImHp-γ-PyPyPyHpPy
1146)	5'-W T A G G A W-3'	HpPyImImPy-γ-HpPyPyHpPy
1147)	5'-W T A G C T W-3'	HpPyImPyHp-γ-PyImPyHpPy
1148)	5'-W T A G C A W-3'	HpPyImPyPy-γ-HpImPyHpPy
1149)	5'-W T A G G G W-3'	HpPyImImIm-γ-PyPyPyHpPy
1150)	5'-W T A G G C W-3'	HpPyImImPy-γ-ImPyPyHpPy
1151)	5'-W T A G C G W-3'	HpPyImPyIm-γ-PyImPyHpPy
1152)	5'-W T A G C C W-3'	HpPyImPyPy-γ-ImImPyHpPy
1153)	5'-W T A C T T W-3'	HpPyPyHpHp-γ-PyPyImHpPy
1154)	5'-W T A C T A W-3'	HpPyPyHpPy-γ-HpPyImHpPy
1155)	5'-W T A C T G W-3'	HpPyPyHpIm-γ-PyPyImHpPy
1156)	5'-W T A C T C W-3'	HpPyPyHpPy-γ-ImPyImHpPy
1157)	5'-W T A C A T W-3'	HpPyPyPyHp-γ-PyHpImHpPy
1158)	5'-W T A C A A W-3'	HpPyPyPyPy-γ-HpHpImHpPy
1159)	5'-W T A C A G W-3'	HpPyPyPyIm-γ-PyHpImHpPy
1160)	5'-W T A C A C W-3'	HpPyPyPyPy-γ-ImHpImHpPy
1161)	5'-W T A C G T W-3'	HpPyPyImHp-γ-PyPyImHpPy
1162)	5'-W T A C G A W-3'	HpPyPyImPy-γ-HpPyImHpPy
1163)	5'-W T A C C T W-3'	HpPyPyPyHp-γ-PyImImHpPy
1164)	5'-W T A C C A W-3'	HpPyPyPyPy-γ-HpImImHpPy
1165)	5'-W T A C G G W-3'	HpPyPyImIm-γ-PyPyImHpPy
1166)	5'-W T A C G C W-3'	HpPyPyImPy-γ-ImPyImHpPy
1167)	5'-W T A C C G W-3'	HpPyPyPyIm-γ-PyImImHpPy
1168)	5'-W T A C C C W-3'	HpPyPyPyPy-γ-ImImImHpPy

TABLE 50: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTCWNNW-3'

DNA sequence		aromatic amino acid sequence
1169)	5'-W T C T T T W-3'	HpPyHpHpHp-γ-PyPyPyImPy
1170)	5'-W T C T T A W-3'	HpPyHpHpPy-γ-HpPyPyImPy
1171)	5'-W T C T T G W-3'	HpPyHpHpIm-γ-PyPyPyImPy
1172)	5'-W T C T T C W-3'	HpPyHpHpPy-γ-ImPyPyImPy
1173)	5'-W T C T A T W-3'	HpPyHpPyHp-γ-PyHpPyImPy
1174)	5'-W T C T A A W-3'	HpPyHpPyPy-γ-HpHpPyImPy
1175)	5'-W T C T A G W-3'	HpPyHpPyIm-γ-PyHpPyImPy
1176)	5'-W T C T A C W-3'	HpPyHpPyPy-γ-ImHpPyImPy
1177)	5'-W T C T G T W-3'	HpPyHpImHp-γ-PyPyPyImPy
1178)	5'-W T C T G A W-3'	HpPyHpImPy-γ-HpPyPyImPy
1179)	5'-W T C T G G W-3'	HpPyHpImIm-γ-PyPyPyImPy
1180)	5'-W T C T G C W-3'	HpPyHpImPy-γ-ImPyPyImPy
1181)	5'-W T C T C T W-3'	HpPyHpPyHp-γ-PyImPyImPy
1182)	5'-W T C T C A W-3'	HpPyHpPyPy-γ-HpImPyImPy
1183)	5'-W T C T C G W-3'	HpPyHpPyIm-γ-PyImPyImPy
1184)	5'-W T C T C C W-3'	HpPyHpPyPy-γ-ImImPyImPy
1185)	5'-W T C A T T W-3'	HpPyPyHpHp-γ-PyPyHpImPy
1186)	5'-W T C A T A W-3'	HpPyPyHpPy-γ-HpPyHpImPy
1187)	5'-W T C A T G W-3'	HpPyPyHpIm-γ-PyPyHpImPy
1188)	5'-W T C A T C W-3'	HpPyPyHpPy-γ-ImPyHpImPy
1189)	5'-W T C A A T W-3'	HpPyPyPyHp-γ-PyHpHpImPy
1190)	5'-W T C A A A W-3'	HpPyPyPyPy-γ-HpHpHpImPy
1191)	5'-W T C A A G W-3'	HpPyPyPyIm-γ-PyHpHpImPy
1192)	5'-W T C A A C W-3'	HpPyPyPyPy-γ-ImHpHpImPy
1193)	5'-W T C A G T W-3'	HpPyPyImHp-γ-PyPyHpImPy
1194)	5'-W T C A G A W-3'	HpPyPyImPy-γ-HpPyHpImPy
1195)	5'-W T C A G G W-3'	HpPyPyImIm-γ-PyPyHpImPy
1196)	5'-W T C A G C W-3'	HpPyPyImPy-γ-ImPyHpImPy
1197)	5'-W T C A C T W-3'	HpPyPyPyHp-γ-PyImHpImPy
1198)	5'-W T C A C A W-3'	HpPyPyPyPy-γ-HpImHpImPy
1199)	5'-W T C A C G W-3'	HpPyPyPyIm-γ-PyImHpImPy
1200)	5'-W T C A C C W-3'	HpPyPyPyPy-γ-ImImHpImPy

TABLE 51: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTCSNNW-3'

DNA sequence		aromatic amino acid sequence
1201)	5'-W T C G T T W-3'	HpPyImHpHp- γ -PyPyPyImPy
1202)	5'-W T C G T A W-3'	HpPyImHpPy- γ -HpPyPyImPy
1203)	5'-W T C G T G W-3'	HpPyImHpIm- γ -PyPyPyImPy
1204)	5'-W T C G T C W-3'	HpPyImHpPy- γ -ImPyPyImPy
1205)	5'-W T C G A T W-3'	HpPyImPyHp- γ -PyHpPyImPy
1206)	5'-W T C G A A W-3'	HpPyImPyPy- γ -HpHpPyImPy
1207)	5'-W T C G A G W-3'	HpPyImPyIm- γ -PyHpPyImPy
1208)	5'-W T C G A C W-3'	HpPyImPyPy- γ -ImHpPyImPy
1209)	5'-W T C G G T W-3'	HpPyImImHp- γ -PyPyPyImPy
1210)	5'-W T C G G A W-3'	HpPyImImPy- γ -HpPyPyImPy
1211)	5'-W T C G C T W-3'	HpPyImPyHp- γ -PyImPyImPy
1212)	5'-W T C G C A W-3'	HpPyImPyPy- γ -HpImPyImPy
1213)	5'-W T C C T T W-3'	HpPyPyHpHp- γ -PyPyImImPy
1214)	5'-W T C C T A W-3'	HpPyPyHpPy- γ -HpPyImImPy
1215)	5'-W T C C T G W-3'	HpPyPyHpIm- γ -PyPyImImPy
1216)	5'-W T C C T C W-3'	HpPyPyHpPy- γ -ImPyImImPy
1217)	5'-W T C C A T W-3'	HpPyPyPyHp- γ -PyHpImImPy
1218)	5'-W T C C A A W-3'	HpPyPyPyPy- γ -HpHpImImPy
1219)	5'-W T C C A G W-3'	HpPyPyPyIm- γ -PyHpImImPy
1220)	5'-W T C C A C W-3'	HpPyPyPyPy- γ -ImHpImImPy
1221)	5'-W T C C G T W-3'	HpPyPyImHp- γ -PyPyImImPy
1222)	5'-W T C C G A W-3'	HpPyPyImPy- γ -HpPyImImPy
1223)	5'-W T C C C T W-3'	HpPyPyPyHp- γ -PyImImImPy
1224)	5'-W T C C C A W-3'	HpPyPyPyPy- γ -HpImImImPy
1225)	5'-W T C G G G W-3'	HpPyImImIm- γ -PyPyPyImPy
1226)	5'-W T C G G C W-3'	HpPyImImPy- γ -ImPyPyImPy
1227)	5'-W T C G C G W-3'	HpPyImPyIm- γ -PyImPyImPy
1228)	5'-W T C G C C W-3'	HpPyImPyPy- γ -ImImPyImPy
1229)	5'-W T C C G G W-3'	HpPyPyImIm- γ -PyPyImImPy
1230)	5'-W T C C G C W-3'	HpPyPyImPy- γ -ImPyImImPy
1231)	5'-W T C C C G W-3'	HpPyPyPyIm- γ -PyImImImPy
1232)	5'-W T C C C C W-3'	HpPyPyPyPy- γ -ImImImImPy

TABLE 52: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGGWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	243 β) 5'-W G G T T G W-3'	ImIm- β -HpIm- γ -PyPyPyPyPy
5	243 β p) 5'-W G G T T G W-3'	ImIm- β -HpIm- γ -PyPy- β -PyPy
	247 β) 5'-W G G T A G W-3'	ImIm- β -PyIm- γ -PyHpPyPyPy
	247 β p) 5'-W G G T A G W-3'	ImIm- β -PyIm- γ -PyHp- β -PyPy
	249 β) 5'-W G G T G T W-3'	ImIm- β -ImHp- γ -PyPyPyPyPy
	249 β p) 5'-W G G T G T W-3'	ImIm- β -ImHp- γ -PyPy- β -PyPy
10	250 β) 5'-W G G T G A W-3'	ImIm- β -ImPy- γ -HpPyPyPyPy
	250 β p) 5'-W G G T G A W-3'	ImIm- β -ImPy- γ -HpPy- β -PyPy
	251 β) 5'-W G G T G G W-3'	ImIm- β -ImIm- γ -PyPyPyPyPy
	251 β p) 5'-W G G T G G W-3'	ImIm- β -ImIm- γ -PyPy- β -PyPy
	252 β) 5'-W G G T G C W-3'	ImIm- β -ImPy- γ -ImPyPyPyPy
15	252 β p) 5'-W G G T G C W-3'	ImIm- β -ImPy- γ -ImPy- β -PyPy
	255 β) 5'-W G G T C G W-3'	ImIm- β -PyIm- γ -PyImPyPyPy
	255 β p) 5'-W G G T C G W-3'	ImIm- β -PyIm- γ -PyIm- β -PyPy
	259 β) 5'-W G G A T G W-3'	ImIm- β -HpIm- γ -PyPyHpPyPy
	259 β p) 5'-W G G A T G W-3'	ImIm- β -HpIm- γ -PyPy- β -PyPy
20	263 β) 5'-W G G A A G W-3'	ImIm- β -PyIm- γ -PyHpHpPyPy
	263 β p) 5'-W G G A A G W-3'	ImIm- β -PyIm- γ -PyHp- β -PyPy
	265 β) 5'-W G G A G T W-3'	ImIm- β -ImHp- γ -PyPyHpPyPy
	265 β p) 5'-W G G A G T W-3'	ImIm- β -ImHp- γ -PyPy- β -PyPy
	266 β) 5'-W G G A G A W-3'	ImIm- β -ImPy- γ -HpPyHpPyPy
25	266 β p) 5'-W G G A G A W-3'	ImIm- β -ImPy- γ -HpPy- β -PyPy
	267 β) 5'-W G G A G G W-3'	ImIm- β -ImIm- γ -PyPyHpPyPy
	267 β p) 5'-W G G A G G W-3'	ImIm- β -ImIm- γ -PyPy- β -PyPy
	268 β) 5'-W G G A G C W-3'	ImIm- β -ImPy- γ -ImPyHpPyPy
	268 β p) 5'-W G G A G C W-3'	ImIm- β -ImPy- γ -ImPy- β -PyPy
30	271 β) 5'-W G G A C G W-3'	ImIm- β -PyIm- γ -PyImHpPyPy
	271 β p) 5'-W G G A C G W-3'	ImIm- β -PyIm- γ -PyIm- β -PyPy

TABLE 53: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGGSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	273 β) 5'-W G G G T T W-3'	ImImIm- β -Hp- γ -PyPyPyPyPy
5	273 β p) 5'-W G G G T T W-3'	ImImIm- β -Hp- γ -Py- β -PyPyPy
	274 β) 5'-W G G G T A W-3'	ImImIm- β -Py- γ -HpPyPyPyPy
	274 β p) 5'-W G G G T A W-3'	ImImIm- β -Py- γ -Hp- β -PyPyPy
	275 β) 5'-W G G G T G W-3'	ImImIm- β -Im- γ -PyPyPyPyPy
	275 β p) 5'-W G G G T G W-3'	ImImIm- β -Im- γ -Py- β -PyPyPy
10	276 β) 5'-W G G G T C W-3'	ImImIm- β -Py- γ -ImPyPyPyPy
	276 β p) 5'-W G G G T C W-3'	ImImIm- β -Py- γ -Im- β -PyPyPy
	277 β) 5'-W G G G A T W-3'	ImImIm- β -Hp- γ -PyHpPyPyPy
	277 β p) 5'-W G G G A T W-3'	ImImIm- β -Hp- γ -Py- β -PyPyPy
	278 β) 5'-W G G G A A W-3'	ImImIm- β -Py- γ -HpHpPyPyPy
	278 β p) 5'-W G G G A A W-3'	ImImIm- β -Py- γ -Hp- β -PyPyPy
	279 β) 5'-W G G G A G W-3'	ImImIm- β -Im- γ -PyHpPyPyPy
	279 β p) 5'-W G G G A G W-3'	ImImIm- β -Im- γ -Py- β -PyPyPy
	280 β) 5'-W G G G A C W-3'	ImImIm- β -Py- γ -ImHpPyPyPy
	280 β p) 5'-W G G G A C W-3'	ImImIm- β -Py- γ -Im- β -PyPyPy
20	283 β) 5'-W G G G C T W-3'	ImImIm- β -Hp- γ -PyImPyPyPy
	284 β) 5'-W G G G C A W-3'	ImImIm- β -Py- γ -HpImPyPyPy
	285 β) 5'-W G G C T T W-3'	ImImPyHpHp- γ -Py- β -ImPyPy
	285 β p) 5'-W G G C T T W-3'	ImImPy- β -Hp- γ -Py- β -ImPyPy
	286 β) 5'-W G G C T A W-3'	ImImPyHpPy- γ -Hp- β -ImPyPy
25	286 β p) 5'-W G G C T A W-3'	ImImPy- β -Py- γ -Hp- β -ImPyPy
	287 β) 5'-W G G C T G W-3'	ImIm- β -HpIm- γ -Py- β -ImPyPy
	288 β) 5'-W G G C T C W-3'	ImImPyHpPy- γ -Im- β -ImPyPy
	288 β p) 5'-W G G C T C W-3'	ImImPy- β -Py- γ -Im- β -ImPyPy
	289 β) 5'-W G G C A T W-3'	ImImPyPyHp- γ -Py- β -ImPyPy
30	289 β p) 5'-W G G C A T W-3'	ImImPy- β -Hp- γ -Py- β -ImPyPy
	290 β) 5'-W G G C A A W-3'	ImImPyPyPy- γ -Hp- β -ImPyPy
	290 β p) 5'-W G G C A A W-3'	ImImPy- β -Py- γ -Hp- β -ImPyPy

TABLE 53 (cont.): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGGSNNW-3' with β substitutions.

DNA sequence		aromatic amino acid sequence
291 β)	5'-W G G C A G W-3'	ImIm- β -PyIm- γ -Py- β -ImPyPy
292 β)	5'-W G G C A C W-3'	ImImPyPyPy- γ -Im- β -ImPyPy
292 β p)	5'-W G G C A C W-3'	ImImPy- β -Py- γ -Im- β -ImPyPy
293 β)	5'-W G G C G T W-3'	ImIm- β -ImHp- γ -Py- β -ImPyPy
294 β)	5'-W G G C G A W-3'	ImIm- β -ImPy- γ -Hp- β -ImPyPy
295 β)	5'-W G G C C T W-3'	ImImPyPyHp- γ -PyImIm- β -Py
296 β)	5'-W G G C C A W-3'	ImImPyPyPy- γ -HpImIm- β -Py
G19 β)	5'-W G G G C G W-3'	ImImIm- β -Im- γ -PyImPyPyPy
G20 β)	5'-W G G G C C W-3'	ImImIm- β -Py- γ -ImImPyPyPy
G21 β)	5'-W G G C G G W-3'	ImIm- β -ImIm- γ -Py- β -ImPyPy
G22 β)	5'-W G G C G C W-3'	ImIm- β -ImPy- γ -Im- β -ImPyPy
G23 β)	5'-W G G C C G W-3'	ImIm- β -PyIm- γ -PyImIm- β -Py
G24 β)	5'-W G G C C C W-3'	ImImPyPyPy- γ -ImImIm- β -Py

TABLE 54: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGTWNNW-3' with β substitutions.

DNA sequence		aromatic amino acid sequence
299 β)	5'-W G T T T G W-3'	ImHp- β -HpIm- γ -PyPyPyPyPy
299 β p)	5'-W G T T T G W-3'	ImHp- β -HpIm- γ -PyPy- β -PyPy
303 β)	5'-W G T T A G W-3'	ImHp- β -PyIm- γ -PyHpPyPyPy
303 β p)	5'-W G T T A G W-3'	ImHp- β -PyIm- γ -PyHp- β -PyPy
305 β)	5'-W G T T G T W-3'	ImHp- β -ImHp- γ -PyPyPyPyPy
305 β p)	5'-W G T T G T W-3'	ImHp- β -ImHp- γ -PyPy- β -PyPy
306 β)	5'-W G T T G A W-3'	ImHp- β -ImPy- γ -HpPyPyPyPy
306 β p)	5'-W G T T G A W-3'	ImHp- β -ImPy- γ -HpPy- β -PyPy
307 β)	5'-W G T T G G W-3'	ImHp- β -ImIm- γ -PyPyPyPyPy
307 β p)	5'-W G T T G G W-3'	ImHp- β -ImIm- γ -PyPy- β -PyPy
308 β)	5'-W G T T G C W-3'	ImHp- β -ImPy- γ -ImPyPyPyPy
308 β p)	5'-W G T T G C W-3'	ImHp- β -ImPy- γ -ImPy- β -PyPy
311 β)	5'-W G T T C G W-3'	ImHp- β -PyIm- γ -PyImPyPyPy
311 β p)	5'-W G T T C G W-3'	ImHp- β -PyIm- γ -PyIm- β -PyPy
315 β)	5'-W G T A T G W-3'	ImHp- β -HpIm- γ -PyPyHpPyPy
315 β p)	5'-W G T A T G W-3'	ImHp- β -HpIm- γ -PyPy- β -PyPy
319 β)	5'-W G T A A G W-3'	ImHp- β -PyIm- γ -PyHpHpPyPy
319 β p)	5'-W G T A A G W-3'	ImHp- β -PyIm- γ -PyHp- β -PyPy
321 β)	5'-W G T A G T W-3'	ImHp- β -ImHp- γ -PyPyHpPyPy
321 β p)	5'-W G T A G T W-3'	ImHp- β -ImHp- γ -PyPy- β -PyPy
322 β)	5'-W G T A G A W-3'	ImHp- β -ImPy- γ -HpPyHpPyPy
322 β p)	5'-W G T A G A W-3'	ImHp- β -ImPy- γ -HpPy- β -PyPy
323 β)	5'-W G T A G G W-3'	ImHp- β -ImIm- γ -PyPyHpPyPy
323 β p)	5'-W G T A G G W-3'	ImHp- β -ImIm- γ -PyPy- β -PyPy
324 β)	5'-W G T A G C W-3'	ImHp- β -ImPy- γ -ImPyHpPyPy
324 β p)	5'-W G T A G C W-3'	ImHp- β -ImPy- γ -ImPy- β -PyPy
327 β)	5'-W G T A C G W-3'	ImHp- β -PyIm- γ -PyImHpPyPy
327 β p)	5'-W G T A C G W-3'	ImHp- β -PyIm- γ -PyIm- β -PyPy

TABLE 55: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGTSNNW-3' with β substitutions.

DNA sequence		aromatic amino acid sequence
329 β)	5'-W G T G T T W-3'	Im- β -ImHpHp- γ -PyPyPyPyPy
5 329 β p)	5'-W G T G T T W-3'	Im- β -ImHpHp- γ -PyPyPy- β -Py
330 β)	5'-W G T G T A W-3'	Im- β -ImHpPy- γ -HpPyPyPyPy
330 β p)	5'-W G T G T A W-3'	Im- β -ImHpPy- γ -HpPyPy- β -Py
331 β)	5'-W G T G T G W-3'	Im- β -ImHpIm- γ -PyPyPyPyPy
331 β p)	5'-W G T G T G W-3'	Im- β -ImHpIm- γ -PyPyPy- β -Py
10 332 β)	5'-W G T G T C W-3'	Im- β -ImHpPy- γ -ImPyPyPyPy
332 β p)	5'-W G T G T C W-3'	Im- β -ImHpPy- γ -ImPyPy- β -Py
333 β)	5'-W G T G A T W-3'	Im- β -ImPyHp- γ -PyHpPyPyPy
333 β p)	5'-W G T G A T W-3'	Im- β -ImPyHp- γ -PyHpPy- β -Py
334 β)	5'-W G T G A A W-3'	Im- β -ImPyPy- γ -HpHpPyPyPy
334 β p)	5'-W G T G A A W-3'	Im- β -ImPyPy- γ -HpHpPy- β -Py
335 β)	5'-W G T G A G W-3'	Im- β -ImPyIm- γ -PyHpPyPyPy
335 β p)	5'-W G T G A G W-3'	Im- β -ImPyIm- γ -PyHpPy- β -Py
336 β)	5'-W G T G A C W-3'	Im- β -ImPyPy- γ -ImHpPyPyPy
336 β p)	5'-W G T G A C W-3'	Im- β -ImPyPy- γ -ImHpPy- β -Py
20 337 β)	5'-W G T G G T W-3'	Im- β -ImImHp- γ -PyPyPyPyPy
337 β p)	5'-W G T G G T W-3'	Im- β -ImImHp- γ -PyPyPy- β -Py
338 β)	5'-W G T G G A W-3'	Im- β -ImImPy- γ -HpPyPyPyPy
338 β p)	5'-W G T G G A W-3'	Im- β -ImImPy- γ -HpPyPy- β -Py
339 β)	5'-W G T G C T W-3'	Im- β -ImPyHp- γ -PyImPyPyPy
25 339 β p)	5'-W G T G C T W-3'	Im- β -ImPyHp- γ -PyImPy- β -Py
340 β)	5'-W G T G C A W-3'	Im- β -ImPyPy- γ -HpImPyPyPy
340 β p)	5'-W G T G C A W-3'	Im- β -ImPyPy- γ -HpImPy- β -Py
341 β)	5'-W G T G G G W-3'	Im- β -ImImIm- γ -PyPyPyPyPy
341 β p)	5'-W G T G G G W-3'	Im- β -ImImIm- γ -PyPyPy- β -Py
30 342 β)	5'-W G T G G C W-3'	Im- β -ImImPy- γ -ImPyPyPyPy
342 β p)	5'-W G T G G C W-3'	Im- β -ImImPy- γ -ImPyPy- β -Py
343 β)	5'-W G T G C G W-3'	Im- β -ImPyIm- γ -PyImPyPyPy

TABLE 55 (cont.): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGTSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	343 β p) 5'-W G T G C G W-3'	Im- β -ImPyIm- γ -PyImPy- β -Py
	344 β) 5'-W G T G C C W-3'	Im- β -ImPyPy- γ -ImImPyPyPy
5	344 β p) 5'-W G T G C C W-3'	Im- β -ImPyPy- γ -ImImPy- β -Py
	345 β) 5'-W G T C T T W-3'	ImHpPyHpHp- γ -Py- β -ImPyPy
	345 β p) 5'-W G T C T T W-3'	ImHpPy- β -Hp- γ -Py- β -ImPyPy
	346 β) 5'-W G T C T A W-3'	ImHpPyHpPy- γ -Hp- β -ImPyPy
	346 β p) 5'-W G T C T A W-3'	ImHpPy- β -Py- γ -Hp- β -ImPyPy
10	347 β) 5'-W G T C T G W-3'	ImHp- β -HpIm- γ -Py- β -ImPyPy
	348 β) 5'-W G T C T C W-3'	ImHpPyHpPy- γ -Im- β -ImPyPy
	348 β p) 5'-W G T C T C W-3'	ImHpPy- β -Py- γ -Im- β -ImPyPy
	349 β) 5'-W G T C A T W-3'	ImHpPyPyHp- γ -Py- β -ImPyPy
	349 β p) 5'-W G T C A T W-3'	ImHpPyPyHp- γ -Py- β -ImPyPy
15	350 β) 5'-W G T C A A W-3'	ImHpPyPyPy- γ -Hp- β -ImPyPy
	350 β p) 5'-W G T C A A W-3'	ImHpPy- β -Py- γ -Hp- β -ImPyPy
	351 β) 5'-W G T C A G W-3'	ImHp- β -PyIm- γ -Py- β -ImPyPy
	352 β) 5'-W G T C A C W-3'	ImHpPyPyPy- γ -Im- β -ImPyPy
	352 β p) 5'-W G T C A C W-3'	ImHpPy- β -Py- γ -Im- β -ImPyPy
20	353 β) 5'-W G T C G T W-3'	ImHp- β -ImHp- γ -Py- β -ImPyPy
	354 β) 5'-W G T C G A W-3'	ImHp- β -ImPy- γ -Hp- β -ImPyPy
	355 β) 5'-W G T C C T W-3'	ImHpPyPyHp- γ -PyImIm- β -Py
	355 β p) 5'-W G T C C T W-3'	Im- β -PyPyHp- γ -PyImIm- β -Py
	356 β) 5'-W G T C C A W-3'	ImHpPyPyPy- γ -HpImIm- β -Py
25	356 β p) 5'-W G T C C A W-3'	Im- β -PyPyPy- γ -HpImIm- β -Py
	357 β) 5'-W G T C G G W-3'	ImHp- β -ImIm- γ -Py- β -ImPyPy
	358 β) 5'-W G T C G C W-3'	ImHp- β -ImPy- γ -Im- β -ImPyPy
	359 β) 5'-W G T C C G W-3'	ImHp- β -PyIm- γ -PyImIm- β -Py
	360 β) 5'-W G T C C C W-3'	ImHpPyPyPy- γ -ImImIm- β -Py
30	360 β p) 5'-W G T C C C W-3'	Im- β -PyPyPy- γ -ImImIm- β -Py

TABLE 56: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGAWNNW-3' with β substitutions.

DNA sequence		aromatic amino acid sequence
363 β)	5'-W G A T T G W-3'	ImPy- β -HpIm- γ -PyPyPyHpPy
363 β p)	5'-W G A T T G W-3'	ImPy- β -HpIm- γ -PyPy- β -HpPy
367 β)	5'-W G A T A G W-3'	ImPy- β -PyIm- γ -PyHpPyHpPy
367 β p)	5'-W G A T A G W-3'	ImPy- β -PyIm- γ -PyHp- β -HpPy
369 β)	5'-W G A T G T W-3'	ImPy- β -ImHp- γ -PyPyPyHpPy
369 β p)	5'-W G A T G T W-3'	ImPy- β -ImHp- γ -PyPy- β -HpPy
370 β)	5'-W G A T G A W-3'	ImPy- β -ImPy- γ -HpPyPyHpPy
370 β p)	5'-W G A T G A W-3'	ImPy- β -ImPy- γ -HpPy- β -HpPy
371 β)	5'-W G A T G G W-3'	ImPy- β -ImIm- γ -PyPyPyHpPy
371 β p)	5'-W G A T G G W-3'	ImPy- β -ImIm- γ -PyPy- β -HpPy
372 β)	5'-W G A T G C W-3'	ImPy- β -ImPy- γ -ImPyPyHpPy
372 β p)	5'-W G A T G C W-3'	ImPy- β -ImPy- γ -ImPy- β -HpPy
375 β)	5'-W G A T C G W-3'	ImPy- β -PyIm- γ -PyImPyHpPy
375 β p)	5'-W G A T C G W-3'	ImPy- β -PyIm- γ -PyIm- β -HpPy
379 β)	5'-W G A A T G W-3'	ImPy- β -HpIm- γ -PyPyHpHpPy
379 β p)	5'-W G A A T G W-3'	ImPy- β -HpIm- γ -PyPy- β -HpPy
383 β)	5'-W G A A A G W-3'	ImPy- β -PyIm- γ -PyHpHpHpPy
383 β p)	5'-W G A A A G W-3'	ImPy- β -PyIm- γ -PyHp- β -HpPy
385 β)	5'-W G A A G T W-3'	ImPy- β -ImHp- γ -PyPyHpHpPy
385 β p)	5'-W G A A G T W-3'	ImPy- β -ImHp- γ -PyPy- β -HpPy
386 β)	5'-W G A A G A W-3'	ImPy- β -ImPy- γ -HpPyHpHpPy
386 β p)	5'-W G A A G A W-3'	ImPy- β -ImPy- γ -HpPy- β -HpPy
387 β)	5'-W G A A G G W-3'	ImPy- β -ImIm- γ -PyPyHpHpPy
387 β p)	5'-W G A A G G W-3'	ImPy- β -ImIm- γ -PyPy- β -HpPy
388 β)	5'-W G A A G C W-3'	ImPy- β -ImPy- γ -ImPyHpHpPy
388 β p)	5'-W G A A G C W-3'	ImPy- β -ImPy- γ -ImPy- β -HpPy
391 β)	5'-W G A A C G W-3'	ImPy- β -PyIm- γ -PyImHpHpPy
391 β p)	5'-W G A A C G W-3'	ImPy- β -PyIm- γ -PyIm- β -HpPy

TABLE 57: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGASNNW-3' with β substitutions.

DNA sequence		aromatic amino acid sequence
393 β)	5'-W G A G T T W-3'	Im- β -ImHpHp- γ -PyPyPyHpPy
394 β p)	5'-W G A G T A W-3'	Im- β -ImHpPy- γ -HpPyPy- β -Py
395 β)	5'-W G A G T G W-3'	Im- β -ImHpIm- γ -PyPyPyHpPy
395 β p)	5'-W G A G T G W-3'	Im- β -ImHpIm- γ -PyPyPy- β -Py
396 β)	5'-W G A G T C W-3'	Im- β -ImHpPy- γ -ImPyPyHpPy
396 β p)	5'-W G A G T C W-3'	Im- β -ImHpPy- γ -ImPyPy- β -Py
397 β)	5'-W G A G A T W-3'	Im- β -ImPyHp- γ -PyHpPyHpPy
397 β p)	5'-W G A G A T W-3'	Im- β -ImPyHp- γ -PyHpPy- β -Py
398 β)	5'-W G A G A A W-3'	Im- β -ImPyPy- γ -HpHpPyHpPy
398 β p)	5'-W G A G A A W-3'	Im- β -ImPyPy- γ -HpHpPy- β -Py
399 β)	5'-W G A G A G W-3'	Im- β -ImPyIm- γ -PyHpPyHpPy
399 β p)	5'-W G A G A G W-3'	Im- β -ImPyIm- γ -PyHpPy- β -Py
400 β)	5'-W G A G A C W-3'	Im- β -ImPyPy- γ -ImHpPyHpPy
400 β p)	5'-W G A G A C W-3'	Im- β -ImPyPy- γ -ImHpPy- β -Py
401 β)	5'-W G A G G T W-3'	Im- β -ImImHp- γ -PyPyPyHpPy
401 β p)	5'-W G A G G T W-3'	Im- β -ImImHp- γ -PyPyPy- β -Py
402 β)	5'-W G A G G A W-3'	Im- β -ImImPy- γ -HpPyPyHpPy
402 β p)	5'-W G A G G A W-3'	Im- β -ImImPy- γ -HpPyPy- β -Py
403 β)	5'-W G A G C T W-3'	Im- β -ImPyHp- γ -PyImPyHpPy
403 β p)	5'-W G A G C T W-3'	Im- β -ImPyHp- γ -PyImPy- β -Py
404 β)	5'-W G A G C A W-3'	Im- β -ImPyPy- γ -HpImPyHpPy
404 β p)	5'-W G A G C A W-3'	Im- β -ImPyPy- γ -HpImPy- β -Py
405 β)	5'-W G A G G G W-3'	Im- β -ImImIm- γ -PyPyPyHpPy
405 β p)	5'-W G A G G G W-3'	Im- β -ImImIm- γ -PyPyPy- β -Py
406 β)	5'-W G A G G C W-3'	Im- β -ImImPy- γ -ImPyPyHpPy
406 β p)	5'-W G A G G C W-3'	Im- β -ImImPy- γ -ImPyPy- β -Py
407 β)	5'-W G A G C G W-3'	Im- β -ImPyIm- γ -PyImPyHpPy
407 β p)	5'-W G A G C G W-3'	Im- β -ImPyIm- γ -PyImPy- β -Py
408 β)	5'-W G A G C C W-3'	Im- β -ImPyPy- γ -ImImPyHpPy
408 β p)	5'-W G A G C C W-3'	Im- β -ImPyPy- γ -ImImPy- β -Py

TABLE 57 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGASNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	409 β) 5'-W G A C T T W-3'	ImPyPyHpHp- γ -Py- β -ImHpPy
	409 β p) 5'-W G A C T T W-3'	ImPyPy- β -Hp- γ -Py- β -ImHpPy
5	410 β) 5'-W G A C T A W-3'	ImPyPyHpPy- γ -Hp- β -ImHpPy
	410 β p) 5'-W G A C T A W-3'	ImPyPy- β -Py- γ -Hp- β -ImHpPy
	411 β) 5'-W G A C T G W-3'	ImPy- β -HpIm- γ -Py- β -ImHpPy
	412 β) 5'-W G A C T C W-3'	ImPyPyHpPy- γ -Im- β -ImHpPy
	412 β p) 5'-W G A C T C W-3'	ImPyPy- β -Py- γ -Im- β -ImHpPy
10	413 β) 5'-W G A C A T W-3'	ImPyPyPyHp- γ -Py- β -ImHpPy
	413 β p) 5'-W G A C A T W-3'	ImPyPy- β -Hp- γ -Py- β -ImHpPy
	414 β) 5'-W G A C A A W-3'	ImPyPyPyPy- γ -Hp- β -ImHpPy
	414 β p) 5'-W G A C A A W-3'	ImPyPy- β -Py- γ -Hp- β -ImHpPy
	415 β) 5'-W G A C A G W-3'	ImPy- β -PyIm- γ -Py- β -ImHpPy
	416 β) 5'-W G A C A C W-3'	ImPyPyPyPy- γ -Im- β -ImHpPy
	416 β p) 5'-W G A C A C W-3'	ImPyPy- β -Py- γ -Im- β -ImHpPy
	417 β) 5'-W G A C G T W-3'	ImPy- β -ImHp- γ -Py- β -ImHpPy
	418 β) 5'-W G A C G A W-3'	ImPy- β -ImPy- γ -Hp- β -ImHpPy
	419 β) 5'-W G A C C T W-3'	Im- β -PyPyHp- γ -PyImIm- β -Py
	419 β p) 5'-W G A C C T W-3'	ImPyPyPyHp- γ -PyImIm- β -Py
	420 β) 5'-W G A C C A W-3'	Im- β -PyPyPy- γ -HpImIm- β -Py
	420 β p) 5'-W G A C C A W-3'	ImPyPyPyPy- γ -HpImIm- β -Py
	421 β) 5'-W G A C G G W-3'	ImPy- β -ImIm- γ -Py- β -ImHpPy
	422 β) 5'-W G A C G C W-3'	ImPy- β -ImPy- γ -Im- β -ImHpPy
25	423 β) 5'-W G A C C G W-3'	ImPy- β -PyIm- γ -PyImIm- β -Py
	424 β) 5'-W G A C C C W-3'	ImPyPyPyPy- γ -ImImIm- β -Py
	424 β p) 5'-W G A C C C W-3'	Im- β -PyPyPy- γ -ImImIm- β -Py

TABLE 58: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGCWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	425 β) 5'-W G C T T T W-3'	ImPyHpHpHp- γ -PyPy- β -ImPy
5	425 β p) 5'-W G C T T T W-3'	ImPy- β -HpHp- γ -PyPy- β -ImPy
	426 β) 5'-W G C T T A W-3'	ImPyHpHpPy- γ -HpPy- β -ImPy
	426 β p) 5'-W G C T T A W-3'	ImPy- β -HpPy- γ -HpPy- β -ImPy
	427 β) 5'-W G C T T G W-3'	ImPy- β -HpIm- γ -PyPy- β -ImPy
	428 β) 5'-W G C T T C W-3'	ImPyHpHpPy- γ -ImPy- β -ImPy
10	428 β p) 5'-W G C T T C W-3'	ImPy- β -HpPy- γ -ImPy- β -ImPy
	429 β) 5'-W G C T A T W-3'	ImPyHpPyHp- γ -PyHp- β -ImPy
	429 β p) 5'-W G C T A T W-3'	ImPy- β -PyHp- γ -PyHp- β -ImPy
	430 β) 5'-W G C T A A W-3'	ImPyHpPyPy- γ -HpHp- β -ImPy
	430 β p) 5'-W G C T A A W-3'	ImPy- β -PyPy- γ -HpHp- β -ImPy
15	431 β) 5'-W G C T A G W-3'	ImPy- β -PyIm- γ -PyHp- β -ImPy
	432 β) 5'-W G C T A C W-3'	ImPyHpPyPy- γ -ImHp- β -ImPy
	432 β p) 5'-W G C T A C W-3'	ImPy- β -PyPy- γ -ImHp- β -ImPy
	433 β) 5'-W G C T G T W-3'	ImPy- β -ImHp- γ -PyPy- β -ImPy
	434 β) 5'-W G C T G A W-3'	ImPy- β -ImPy- γ -HpPy- β -ImPy
20	435 β) 5'-W G C T G G W-3'	ImPy- β -ImIm- γ -PyPy- β -ImPy
	436 β) 5'-W G C T G C W-3'	ImPy- β -ImPy- γ -ImPy- β -ImPy
	437 β) 5'-W G C T C T W-3'	ImPyHpPyHp- γ -PyIm- β -ImPy
	437 β p) 5'-W G C T C T W-3'	ImPy- β -PyHp- γ -PyIm- β -ImPy
	438 β) 5'-W G C T C A W-3'	ImPyHpPyPy- γ -HpIm- β -ImPy
25	438 β p) 5'-W G C T C A W-3'	ImPy- β -PyPy- γ -HpIm- β -ImPy
	439 β) 5'-W G C T C G W-3'	ImPy- β -PyIm- γ -PyIm- β -ImPy
	440 β) 5'-W G C T C C W-3'	ImPyHpPyPy- γ -ImIm- β -ImPy
	440 β p) 5'-W G C T C C W-3'	ImPy- β -PyPy- γ -ImIm- β -ImPy
	441 β) 5'-W G C A T T W-3'	ImPyPyHpHp- γ -PyPy- β -ImPy
30	441 β p) 5'-W G C A T T W-3'	ImPy- β -HpHp- γ -PyPy- β -ImPy
	442 β) 5'-W G C A T A W-3'	ImPyPyHpPy- γ -HpPy- β -ImPy
	442 β p) 5'-W G C A T A W-3'	ImPy- β -HpPy- γ -HpPy- β -ImPy
	443 β) 5'-W G C A T G W-3'	ImPy- β -HpIm- γ -PyPy- β -ImPy

TABLE 58 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGCWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	444 β) 5'-W G C A T C W-3'	ImPyPyHpPy- γ -ImPy- β -ImPy
	444 β p) 5'-W G C A T C W-3'	ImPy- β -HpPy- γ -ImPy- β -ImPy
5	445 β) 5'-W G C A A T W-3'	ImPyPyPyHpPy- γ -PyHp- β -ImPy
	445 β p) 5'-W G C A A T W-3'	ImPy- β -PyHp- γ -PyHp- β -ImPy
	446 β) 5'-W G C A A A W-3'	ImPyPyPyPy- γ -HpHp- β -ImPy
	446 β p) 5'-W G C A A A W-3'	ImPy- β -PyPy- γ -HpHp- β -ImPy
	447 β) 5'-W G C A A G W-3'	ImPy- β -PyIm- γ -PyHp- β -ImPy
10	448 β) 5'-W G C A A C W-3'	ImPyPyPyPy- γ -ImHp- β -ImPy
	448 β p) 5'-W G C A A C W-3'	ImPy- β -PyPy- γ -ImHp- β -ImPy
	449 β) 5'-W G C A G T W-3'	ImPy- β -ImHp- γ -PyPy- β -ImPy
	450 β) 5'-W G C A G A W-3'	ImPy- β -ImPy- γ -HpPy- β -ImPy
	451 β) 5'-W G C A G G W-3'	ImPy- β -ImIm- γ -PyPy- β -ImPy
15	452 β) 5'-W G C A G C W-3'	ImPy- β -ImPy- γ -ImPy- β -ImPy
	453 β) 5'-W G C A C T W-3'	ImPyPyPyHpPy- γ -PyIm- β -ImPy
	453 β p) 5'-W G C A C T W-3'	ImPy- β -PyHp- γ -PyIm- β -ImPy
	454 β) 5'-W G C A C A W-3'	ImPyPyPyPy- γ -HpIm- β -ImPy
	454 β p) 5'-W G C A C A W-3'	ImPy- β -PyPy- γ -HpIm- β -ImPy
20	455 β) 5'-W G C A C G W-3'	ImPy- β -PyIm- γ -PyIm- β -ImPy
	456 β) 5'-W G C A C C W-3'	ImPyPyPyPy- γ -ImIm- β -ImPy
	456 β p) 5'-W G C A C C W-3'	ImPy- β -PyPy- γ -ImIm- β -ImPy

TABLE 59: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGCSNNW-3' with β substitutions.

DNA sequence		aromatic amino acid sequence
457 β)	5'-W G C G T T W-3'	Im- β -ImHpHp- γ -PyPy- β -ImPy
458 β)	5'-W G C G T A W-3'	Im- β -ImHpPy- γ -HpPy- β -ImPy
459 β)	5'-W G C G T G W-3'	Im- β -ImHpIm- γ -PyPy- β -ImPy
460 β)	5'-W G C G T C W-3'	Im- β -ImHpPy- γ -ImPy- β -ImPy
461 β)	5'-W G C G A T W-3'	Im- β -ImPyHp- γ -PyHp- β -ImPy
462 β)	5'-W G C G A A W-3'	Im- β -ImPyPy- γ -HpHp- β -ImPy
463 β)	5'-W G C G A G W-3'	Im- β -ImPyIm- γ -PyHp- β -ImPy
464 β)	5'-W G C G A C W-3'	Im- β -ImPyPy- γ -ImHp- β -ImPy
465 β)	5'-W G C G G T W-3'	Im- β -ImImHp- γ -PyPy- β -ImPy
466 β)	5'-W G C G G A W-3'	Im- β -ImImPy- γ -HpPy- β -ImPy
467 β)	5'-W G C G C T W-3'	Im- β -ImPyHp- γ -PyIm- β -ImPy
468 β)	5'-W G C G C A W-3'	Im- β -ImPyPy- γ -HpIm- β -ImPy
469 β)	5'-W G C C T T W-3'	ImPyPyHpHp- γ -Py- β -ImImPy
469 β p)	5'-W G C C T T W-3'	ImPyPy- β -Hp- γ -Py- β -ImImPy
470 β)	5'-W G C C T A W-3'	ImPyPyHpPy- γ -Hp- β -ImImPy
470 β p)	5'-W G C C T A W-3'	ImPyPy- β -Py- γ -Hp- β -ImImPy
471 β)	5'-W G C C T G W-3'	ImPy- β -HpIm- γ -Py- β -ImImPy
472 β)	5'-W G C C T C W-3'	ImPyPyHpPy- γ -Im- β -ImImPy
472 β p)	5'-W G C C T C W-3'	ImPyPy- β -Py- γ -Im- β -ImImPy
473 β)	5'-W G C C A T W-3'	ImPyPyPyHp- γ -Py- β -ImImPy
473 β p)	5'-W G C C A T W-3'	ImPyPy- β -Hp- γ -Py- β -ImImPy
474 β)	5'-W G C C A A W-3'	ImPyPyPyPy- γ -Hp- β -ImImPy
474 β p)	5'-W G C C A A W-3'	ImPyPy- β -Py- γ -Hp- β -ImImPy
475 β)	5'-W G C C A G W-3'	ImPy- β -PyIm- γ -Py- β -ImImPy
476 β)	5'-W G C C A C W-3'	ImPyPyPyPy- γ -Im- β -ImImPy
476 β p)	5'-W G C C A C W-3'	ImPyPy- β -Py- γ -Im- β -ImImPy
477 β)	5'-W G C C G T W-3'	ImPy- β -ImHp- γ -Py- β -ImImPy
478 β)	5'-W G C C G A W-3'	ImPy- β -ImPy- γ -Hp- β -ImImPy

TABLE 59 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WGCSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	G25 β) 5'-W G C G G G W-3'	Im- β -ImImIm- γ -PyPy- β -ImPy
	G26 β) 5'-W G C G G C W-3'	Im- β -ImImPy- γ -ImPy- β -ImPy
5	G27 β) 5'-W G C G C G W-3'	Im- β -ImPyIm- γ -PyIm- β -ImPy
	G28 β) 5'-W G C G C C W-3'	Im- β -ImPyPy- γ -ImIm- β -ImPy
	G29 β) 5'-W G C C G G W-3'	ImPy- β -ImIm- γ -Py- β -ImImPy
	G30 β) 5'-W G C C G C W-3'	ImPy- β -ImPy- γ -Im- β -ImImPy
10	G31 β) 5'-W G C C C G W-3'	ImPy- β -PyIm- γ -PyImImImPy

TABLE 60: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCGWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	481 β) 5'-W C G T T T W-3'	PyImHpHpHp- γ -PyPy- β -PyIm
5	481 β p) 5'-W C G T T T W-3'	PyIm- β -HpHp- γ -PyPy- β -PyIm
	482 β) 5'-W C G T T A W-3'	PyImHpHpPy- γ -HpPy- β -PyIm
	482 β p) 5'-W C G T T A W-3'	PyIm- β -HpPy- γ -HpPy- β -PyIm
	483 β) 5'-W C G T T G W-3'	PyIm- β -HpIm- γ -PyPy- β -PyIm
	484 β) 5'-W C G T T C W-3'	PyImHpHpPy- γ -ImPy- β -PyIm
10	484 β p) 5'-W C G T T C W-3'	PyIm- β -HpPy- γ -ImPy- β -PyIm
	485 β) 5'-W C G T A T W-3'	PyImHpPyHp- γ -PyHp- β -PyIm
	485 β p) 5'-W C G T A T W-3'	PyIm- β -PyHp- γ -PyHp- β -PyIm
	486 β) 5'-W C G T A A W-3'	PyImHpPyPy- γ -HpHp- β -PyIm
	486 β p) 5'-W C G T A A W-3'	PyIm- β -PyPy- γ -HpHp- β -PyIm
15	487 β) 5'-W C G T A G W-3'	PyIm- β -PyIm- γ -PyHp- β -PyIm
	488 β) 5'-W C G T A C W-3'	PyImHpPyPy- γ -ImHp- β -PyIm
	488 β p) 5'-W C G T A C W-3'	PyIm- β -PyPy- γ -ImHp- β -PyIm
	489 β) 5'-W C G T G T W-3'	PyIm- β -ImHp- γ -PyPy- β -PyIm
	490 β) 5'-W C G T G A W-3'	PyIm- β -ImPy- γ -HpPy- β -PyIm
20	491 β) 5'-W C G T G G W-3'	PyIm- β -ImIm- γ -PyPy- β -PyIm
	492 β) 5'-W C G T G C W-3'	PyIm- β -ImPy- γ -ImPy- β -PyIm
	493 β) 5'-W C G T C T W-3'	PyImHpPyHp- γ -PyIm- β -PyIm
	493 β p) 5'-W C G T C T W-3'	PyIm- β -PyHp- γ -PyIm- β -PyIm
	494 β) 5'-W C G T C A W-3'	PyImHpPyPy- γ -HpIm- β -PyIm
25	494 β p) 5'-W C G T C A W-3'	PyIm- β -PyPy- γ -HpIm- β -PyIm
	495 β) 5'-W C G T C G W-3'	PyIm- β -PyIm- γ -PyIm- β -PyIm
	496 β) 5'-W C G T C C W-3'	PyImHpPyPy- γ -ImIm- β -PyIm
	496 β p) 5'-W C G T C C W-3'	PyIm- β -PyPy- γ -ImIm- β -PyIm
	497 β) 5'-W C G A T T W-3'	PyImPyHpHp- γ -PyPy- β -PyIm
30	497 β p) 5'-W C G A T T W-3'	PyIm- β -HpHp- γ -PyPy- β -PyIm
	498 β) 5'-W C G A T A W-3'	PyImPyHpPy- γ -HpPy- β -PyIm
	498 β p) 5'-W C G A T A W-3'	PyIm- β -HpPy- γ -HpPy- β -PyIm

TABLE 60 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCGWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	499 β) 5'-W C G A T G W-3'	PyIm- β -HpIm- γ -PyPy- β -PyIm
	500 β) 5'-W C G A T C W-3'	PyImPyHpPy- γ -ImPy- β -PyIm
5	500 β p) 5'-W C G A T C W-3'	PyIm- β -HpPy- γ -ImPy- β -PyIm
	501 β) 5'-W C G A A T W-3'	PyImPyPyHp- γ -PyHp- β -PyIm
	501 β p) 5'-W C G A A T W-3'	PyIm- β -PyHp- γ -PyHp- β -PyIm
	502 β) 5'-W C G A A A W-3'	PyImPyPyPy- γ -HpHp- β -PyIm
	502 β p) 5'-W C G A A A W-3'	PyIm- β -PyPy- γ -HpHp- β -PyIm
10	503 β) 5'-W C G A A G W-3'	PyIm- β -PyIm- γ -PyHp- β -PyIm
	504 β) 5'-W C G A A C W-3'	PyImPyPyPy- γ -ImHp- β -PyIm
	504 β p) 5'-W C G A A C W-3'	PyIm- β -PyPy- γ -ImHp- β -PyIm
	505 β) 5'-W C G A G T W-3'	PyIm- β -ImHp- γ -PyPy- β -PyIm
	506 β) 5'-W C G A G A W-3'	PyIm- β -ImPy- γ -HpPy- β -PyIm
	507 β) 5'-W C G A G G W-3'	PyIm- β -ImIm- γ -PyPy- β -PyIm
	508 β) 5'-W C G A G C W-3'	PyIm- β -ImPy- γ -ImPy- β -PyIm
	509 β) 5'-W C G A C T W-3'	PyImPyPyHp- γ -PyIm- β -PyIm
	509 β p) 5'-W C G A C T W-3'	PyIm- β -PyHp- γ -PyIm- β -PyIm
	510 β) 5'-W C G A C A W-3'	PyImPyPyPy- γ -HpIm- β -PyIm
20	510 β p) 5'-W C G A C A W-3'	PyIm- β -PyPy- γ -HpIm- β -PyIm
	511 β) 5'-W C G A C G W-3'	PyIm- β -PyIm- γ -PyIm- β -PyIm
	512 β) 5'-W C G A C C W-3'	PyImPyPyPy- γ -ImIm- β -PyIm
	512 β p) 5'-W C G A C C W-3'	PyIm- β -PyPy- γ -ImIm- β -PyIm

TABLE 61: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCGSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	513 β) 5'-W C G G T T W-3'	PyImIm- β -Hp- γ -PyPy- β -PyIm
5	514 β) 5'-W C G G T A W-3'	PyImIm- β -Py- γ -HpPy- β -PyIm
	515 β) 5'-W C G G T G W-3'	PyImIm- β -Im- γ -PyPy- β -PyIm
	516 β) 5'-W C G G T C W-3'	PyImIm- β -Py- γ -ImPy- β -PyIm
	517 β) 5'-W C G G A T W-3'	PyImIm- β -Hp- γ -PyHp- β -PyIm
	518 β) 5'-W C G G A A W-3'	PyImIm- β -Py- γ -HpHp- β -PyIm
10	519 β) 5'-W C G G A G W-3'	PyImIm- β -Im- γ -PyHp- β -PyIm
	520 β) 5'-W C G G A C W-3'	PyImIm- β -Py- γ -ImHp- β -PyIm
	521 β) 5'-W C G G G T W-3'	PyImImImHp- γ -PyPy- β -PyIm
	522 β) 5'-W C G G G A W-3'	PyImImImPy- γ -HpPy- β -PyIm
	523 β) 5'-W C G G C T W-3'	PyImIm- β -Hp- γ -PyIm- β -PyIm
	524 β) 5'-W C G G C A W-3'	PyImIm- β -Py- γ -HpIm- β -PyIm
	525 β) 5'-W C G C T T W-3'	PyImPyHpHp- γ -Py- β -ImPyIm
	525 β p) 5'-W C G C T T W-3'	PyImPy- β -Hp- γ -Py- β -ImPyIm
	526 β) 5'-W C G C T A W-3'	PyImPyHpPy- γ -Hp- β -ImPyIm
	526 β p) 5'-W C G C T A W-3'	PyImPy- β -Py- γ -Hp- β -ImPyIm
	527 β) 5'-W C G C T G W-3'	PyIm- β -HpIm- γ -Py- β -ImPyIm
	528 β) 5'-W C G C T C W-3'	PyImPyHpPy- γ -Im- β -ImPyIm
	528 β p) 5'-W C G C T C W-3'	PyImPy- β -Py- γ -Im- β -ImPyIm
	529 β) 5'-W C G C A T W-3'	PyImPyPyHp- γ -Py- β -ImPyIm
	529 β p) 5'-W C G C A T W-3'	PyImPy- β -Hp- γ -Py- β -ImPyIm
25	530 β) 5'-W C G C A A W-3'	PyImPyPyPy- γ -Hp- β -ImPyIm
	530 β p) 5'-W C G C A A W-3'	PyImPy- β -Py- γ -Hp- β -ImPyIm
	531 β) 5'-W C G C A G W-3'	PyIm- β -PyIm- γ -Py- β -ImPyIm
	532 β) 5'-W C G C A C W-3'	PyImPyPyPy- γ -Im- β -ImPyIm
	532 β p) 5'-W C G C A C W-3'	PyImPy- β -Py- γ -Im- β -ImPyIm
30	533 β) 5'-W C G C G T W-3'	PyIm- β -ImHp- γ -Py- β -ImPyIm
	534 β) 5'-W C G C G A W-3'	PyIm- β -ImPy- γ -Hp- β -ImPyIm

TABLE 61 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCGSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	535 β) 5'-W C G C C T W-3'	PyImPyPyHp- γ -PyImIm- β -Im
5	536 β) 5'-W C G C C A W-3'	PyImPyPyPy- γ -HpImIm- β -Im
	G33 β) 5'-W C G G G G W-3'	PyImImImIm- γ -PyPy- β -PyIm
	G34 β) 5'-W C G G G C W-3'	PyImImImPy- γ -ImPy- β -PyIm
	G35 β) 5'-W C G G C G W-3'	PyImIm- β -Im- γ -PyIm- β -PyIm
	G36 β) 5'-W C G G C C W-3'	PyImIm- β -Py- γ -ImIm- β -PyIm
10	G37 β) 5'-W C G C G G W-3'	PyIm- β -ImIm- γ -Py- β -ImPyIm
	G38 β) 5'-W C G C G C W-3'	PyIm- β -ImPy- γ -Im- β -ImPyIm
	G39 β) 5'-W C G C C G W-3'	PyIm- β -PyIm- γ -PyImIm- β -Im
	G40 β) 5'-W C G C C C W-3'	PyImPyPyPy- γ -ImImIm- β -Im

TABLE 62: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCTWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	537 β) 5'-W C T T T T W-3'	PyHrHrHrHr- γ -PyPy- β -PyIm
5	537 β p) 5'-W C T T T T W-3'	PyHr- β -HrHr- γ -PyPy- β -PyIm
	538 β) 5'-W C T T T A W-3'	PyHrHrHrPy- γ -HrPy- β -PyIm
	538 β p) 5'-W C T T T A W-3'	PyHr- β -HrPy- γ -HrPy- β -PyIm
	539 β) 5'-W C T T T G W-3'	PyHr- β -HrIm- γ -PyPy- β -PyIm
	540 β) 5'-W C T T T C W-3'	PyHrHrHrPy- γ -ImPy- β -PyIm
10	540 β p) 5'-W C T T T C W-3'	PyHr- β -HrPy- γ -ImPy- β -PyIm
	541 β) 5'-W C T T A T W-3'	PyHrHrPyHr- γ -PyHr- β -PyIm
	541 β p) 5'-W C T T A T W-3'	PyHr- β -PyHr- γ -PyHr- β -PyIm
	542 β) 5'-W C T T A A W-3'	PyHrHrPyPy- γ -HrHr- β -PyIm
	542 β p) 5'-W C T T A A W-3'	PyHr- β -PyPy- γ -HrHr- β -PyIm
	543 β) 5'-W C T T A G W-3'	PyHr- β -PyIm- γ -PyHr- β -PyIm
	544 β) 5'-W C T T A C W-3'	PyHrHrPyPy- γ -ImHr- β -PyIm
	544 β p) 5'-W C T T A C W-3'	PyHr- β -PyPy- γ -ImHr- β -PyIm
	545 β) 5'-W C T T G T W-3'	PyHr- β -ImHr- γ -PyPy- β -PyIm
	546 β) 5'-W C T T G A W-3'	PyHr- β -ImPy- γ -HrPy- β -PyIm
	547 β) 5'-W C T T G G W-3'	PyHr- β -ImIm- γ -PyPy- β -PyIm
	548 β) 5'-W C T T G C W-3'	PyHr- β -ImPy- γ -ImPy- β -PyIm
	549 β) 5'-W C T T C T W-3'	PyHrHrPyHr- γ -PyIm- β -PyIm
	549 β p) 5'-W C T T C T W-3'	PyHr- β -PyHr- γ -PyIm- β -PyIm
	550 β) 5'-W C T T C A W-3'	PyHrHrPyPy- γ -HrIm- β -PyIm
25	550 β p) 5'-W C T T C A W-3'	PyHr- β -PyPy- γ -HrIm- β -PyIm
	551 β) 5'-W C T T C G W-3'	PyHr- β -PyIm- γ -PyIm- β -PyIm
	552 β) 5'-W C T T C C W-3'	PyHrHrPyPy- γ -ImIm- β -PyIm
	552 β p) 5'-W C T T C C W-3'	PyHr- β -PyPy- γ -ImIm- β -PyIm
	553 β) 5'-W C T A T T W-3'	PyHrPyHrHr- γ -PyPy- β -PyIm
30	553 β p) 5'-W C T A T T W-3'	PyHr- β -HrHr- γ -PyPy- β -PyIm
	554 β) 5'-W C T A T A W-3'	PyHrPyHrPy- γ -HrPy- β -PyIm

TABLE 62 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCTWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	554 β p) 5'-W C T A T A W-3'	PyHp- β -HpPy- γ -HpPy- β -PyIm
5	555 β) 5'-W C T A T G W-3'	PyHp- β -HpIm- γ -PyPy- β -PyIm
	556 β) 5'-W C T A T C W-3'	PyHpPyHpPy- γ -ImPy- β -PyIm
	556 β p) 5'-W C T A T C W-3'	PyHp- β -HpPy- γ -ImPy- β -PyIm
	557 β) 5'-W C T A A T W-3'	PyHpPyPyHp- γ -PyHp- β -PyIm
	557 β p) 5'-W C T A A T W-3'	PyHp- β -PyHp- γ -PyHp- β -PyIm
10	558 β) 5'-W C T A A A W-3'	PyHpPyPyPy- γ -HpHp- β -PyIm
	558 β p) 5'-W C T A A A W-3'	PyHp- β -PyPy- γ -HpHp- β -PyIm
	559 β) 5'-W C T A A G W-3'	PyHp- β -PyIm- γ -PyHp- β -PyIm
	560 β) 5'-W C T A A C W-3'	PyHpPyPyPy- γ -ImHp- β -PyIm
	560 β p) 5'-W C T A A C W-3'	PyHp- β -PyPy- γ -ImHp- β -PyIm
15	561 β) 5'-W C T A G T W-3'	PyHp- β -ImHp- γ -PyPy- β -PyIm
	562 β) 5'-W C T A G A W-3'	PyHp- β -ImPy- γ -HpPy- β -PyIm
	563 β) 5'-W C T A G G W-3'	PyHp- β -ImIm- γ -PyPy- β -PyIm
	564 β) 5'-W C T A G C W-3'	PyHp- β -ImPy- γ -ImPy- β -PyIm
	565 β) 5'-W C T A C T W-3'	PyHpPyPyHp- γ -PyIm- β -PyIm
20	565 β p) 5'-W C T A C T W-3'	PyHp- β -PyHp- γ -PyIm- β -PyIm
	566 β) 5'-W C T A C A W-3'	PyHpPyPyPy- γ -HpIm- β -PyIm
	566 β p) 5'-W C T A C A W-3'	PyHp- β -PyPy- γ -HpIm- β -PyIm
	567 β) 5'-W C T A C G W-3'	PyHp- β -PyIm- γ -PyIm- β -PyIm
	568 β) 5'-W C T A C C W-3'	PyHpPyPyPy- γ -ImIm- β -PyIm
25	568 β p) 5'-W C T A C C W-3'	PyHp- β -PyPy- γ -ImIm- β -PyIm

TABLE 63: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCTSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	569 β) 5'-W C T G T T W-3'	Py- β -ImHpHp- γ -PyPy- β -PyIm
5	570 β) 5'-W C T G T A W-3'	Py- β -ImHpPy- γ -HpPy- β -PyIm
	571 β) 5'-W C T G T G W-3'	Py- β -ImHpIm- γ -PyPy- β -PyIm
	572 β) 5'-W C T G T C W-3'	Py- β -ImHpPy- γ -ImPy- β -PyIm
	573 β) 5'-W C T G A T W-3'	Py- β -ImPyHp- γ -PyHp- β -PyIm
	574 β) 5'-W C T G A A W-3'	Py- β -ImPyPy- γ -HpHp- β -PyIm
10	575 β) 5'-W C T G A G W-3'	Py- β -ImPyIm- γ -PyHp- β -PyIm
	576 β) 5'-W C T G A C W-3'	Py- β -ImPyPy- γ -ImHp- β -PyIm
	577 β) 5'-W C T G G T W-3'	Py- β -ImImHp- γ -PyPy- β -PyIm
	578 β) 5'-W C T G G A W-3'	Py- β -ImImPy- γ -HpPy- β -PyIm
	579 β) 5'-W C T G C T W-3'	Py- β -ImPyHp- γ -PyIm- β -PyIm
15	580 β) 5'-W C T G C A W-3'	Py- β -ImPyPy- γ -HpIm- β -PyIm
	581 β) 5'-W C T G G G W-3'	Py- β -ImImIm- γ -PyPy- β -PyIm
	582 β) 5'-W C T G G C W-3'	Py- β -ImImPy- γ -ImPy- β -PyIm
	583 β) 5'-W C T G C G W-3'	Py- β -ImPyIm- γ -PyIm- β -PyIm
	584 β) 5'-W C T G C C W-3'	Py- β -ImPyPy- γ -ImIm- β -PyIm
20	585 β) 5'-W C T C T T W-3'	PyHpPyHpHp- γ -Py- β -ImPyIm
	585 β p) 5'-W C T C T T W-3'	PyHpPy- β -Hp- γ -Py- β -ImPyIm
	586 β) 5'-W C T C T A W-3'	PyHpPyHpPy- γ -Hp- β -ImPyIm
	586 β p) 5'-W C T C T A W-3'	PyHpPy- β -Py- γ -Hp- β -ImPyIm
	587 β) 5'-W C T C T G W-3'	PyHp- β -HpIm- γ -Py- β -ImPyIm
25	588 β) 5'-W C T C T C W-3'	PyHpPyHpPy- γ -Im- β -ImPyIm
	588 β p) 5'-W C T C T C W-3'	PyHpPy- β -Py- γ -Im- β -ImPyIm
	589 β) 5'-W C T C A T W-3'	PyHpPyPyHp- γ -Py- β -ImPyIm
	589 β p) 5'-W C T C A T W-3'	PyHpPy- β -Hp- γ -Py- β -ImPyIm
	590 β) 5'-W C T C A A W-3'	PyHpPyPyPy- γ -Hp- β -ImPyIm
30	590 β p) 5'-W C T C A A W-3'	PyHpPy- β -Py- γ -Hp- β -ImPyIm
	591 β) 5'-W C T C A G W-3'	PyHp- β -PyIm- γ -Py- β -ImPyIm

TABLE 63 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCTSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	592 β) 5'-W C T C A C W-3'	PyHpPyPyPy- γ -Im- β -ImPyIm
	592 β p) 5'-W C T C A C W-3'	PyHpPy- β -Py- γ -Im- β -ImPyIm
5	593 β) 5'-W C T C G T W-3'	PyHp- β -ImHp- γ -Py- β -ImPyIm
	594 β) 5'-W C T C G A W-3'	PyHp- β -ImPy- γ -Hp- β -ImPyIm
	595 β) 5'-W C T C C T W-3'	PyHpPyPyHp- γ -PyImIm- β -Im
	595 β p) 5'-W C T C C T W-3'	Py- β -PyPyHp- γ -PyImIm- β -Im
	596 β) 5'-W C T C C A W-3'	PyHpPyPyPy- γ -HpImIm- β -Im
10	596 β p) 5'-W C T C C A W-3'	Py- β -PyPyPy- γ -HpImIm- β -Im
	597 β) 5'-W C T C G G W-3'	PyHp- β -ImIm- γ -Py- β -ImPyIm
	598 β) 5'-W C T C G C W-3'	PyHp- β -ImPy- γ -Im- β -ImPyIm
	599 β) 5'-W C T C C G W-3'	PyHp- β -PyIm- γ -PyImIm- β -Im
	600 β) 5'-W C T C C C W-3'	PyHpPyPyPy- γ -ImImIm- β -Im
	600 β p) 5'-W C T C C C W-3'	Py- β -PyPyPy- γ -ImImIm- β -Im

TABLE 64: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCAWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	601 β) 5'-W C A T T T W-3'	PyPyHpHpHp- γ -PyPy- β -HpIm
5	601 β p) 5'-W C A T T T W-3'	PyPy- β -HpHp- γ -PyPy- β -HpIm
	602 β) 5'-W C A T T A W-3'	PyPyHpHpPy- γ -HpPy- β -HpIm
	602 β p) 5'-W C A T T A W-3'	PyPy- β -HpPy- γ -HpPy- β -HpIm
	603 β) 5'-W C A T T G W-3'	PyPy- β -HpIm- γ -PyPy- β -HpIm
	604 β) 5'-W C A T T C W-3'	PyPyHpHpPy- γ -ImPy- β -HpIm
10	604 β p) 5'-W C A T T C W-3'	PyPy- β -HpPy- γ -ImPy- β -HpIm
	605 β) 5'-W C A T A T W-3'	PyPyHpPyHp- γ -PyHp- β -HpIm
	605 β p) 5'-W C A T A T W-3'	PyPy- β -PyHp- γ -PyHp- β -HpIm
	606 β) 5'-W C A T A A W-3'	PyPyHpPyPy- γ -HpHp- β -HpIm
	606 β p) 5'-W C A T A A W-3'	PyPy- β -PyPy- γ -HpHp- β -HpIm
	607 β) 5'-W C A T A G W-3'	PyPy- β -PyIm- γ -PyHp- β -HpIm
	608 β) 5'-W C A T A C W-3'	PyPyHpPyPy- γ -ImHp- β -HpIm
	608 β p) 5'-W C A T A C W-3'	PyPy- β -PyPy- γ -ImHp- β -HpIm
	609 β) 5'-W C A T G T W-3'	PyPy- β -ImHp- γ -PyPy- β -HpIm
	610 β) 5'-W C A T G A W-3'	PyPy- β -ImPy- γ -HpPy- β -HpIm
20	611 β) 5'-W C A T G G W-3'	PyPy- β -ImIm- γ -PyPy- β -HpIm
	612 β) 5'-W C A T G C W-3'	PyPy- β -ImPy- γ -ImPy- β -HpIm
	613 β) 5'-W C A T C T W-3'	PyPyHpPyHp- γ -PyIm- β -HpIm
	613 β p) 5'-W C A T C T W-3'	PyPy- β -PyHp- γ -PyIm- β -HpIm
	614 β) 5'-W C A T C A W-3'	PyPyHpPyPy- γ -HpIm- β -HpIm
25	614 β p) 5'-W C A T C A W-3'	PyPy- β -PyPy- γ -HpIm- β -HpIm
	615 β) 5'-W C A T C G W-3'	PyPy- β -PyIm- γ -PyIm- β -HpIm
	616 β) 5'-W C A T C C W-3'	PyPyHpPyPy- γ -ImIm- β -HpIm
	616 β p) 5'-W C A T C C W-3'	PyPy- β -PyPy- γ -ImIm- β -HpIm
	617 β) 5'-W C A A T T W-3'	PyPyPyHpHp- γ -PyPy- β -HpIm
30	617 β p) 5'-W C A A T T W-3'	PyPy- β -HpHp- γ -PyPy- β -HpIm
	618 β) 5'-W C A A T A W-3'	PyPyPyHpPy- γ -HpPy- β -HpIm
	618 β p) 5'-W C A A T A W-3'	PyPy- β -HpPy- γ -HpPy- β -HpIm

TABLE 64 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCAWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	619 β) 5'-W C A A T G W-3'	PyPy- β -HpIm- γ -PyPy- β -HpIm
	620 β) 5'-W C A A T C W-3'	PyPyPyHpPy- γ -ImPy- β -HpIm
5	620 β p) 5'-W C A A T C W-3'	PyPy- β -HpPy- γ -ImPy- β -HpIm
	621 β) 5'-W C A A A T W-3'	PyPyPyPyHp- γ -PyHp- β -HpIm
	621 β p) 5'-W C A A A T W-3'	PyPy- β -PyHp- γ -PyHp- β -HpIm
	622 β) 5'-W C A A A A W-3'	PyPyPyPyPy- γ -HpHp- β -HpIm
	622 β p) 5'-W C A A A A W-3'	PyPy- β -PyPy- γ -HpHp- β -HpIm
10	623 β) 5'-W C A A A G W-3'	PyPy- β -PyIm- γ -PyHp- β -HpIm
	624 β) 5'-W C A A A C W-3'	PyPyPyPyPy- γ -ImHp- β -HpIm
	624 β p) 5'-W C A A A C W-3'	PyPy- β -PyPy- γ -ImHp- β -HpIm
	625 β) 5'-W C A A G T W-3'	PyPy- β -ImHp- γ -PyPy- β -HpIm
	626 β) 5'-W C A A G A W-3'	PyPy- β -ImPy- γ -HpPy- β -HpIm
15	627 β) 5'-W C A A G G W-3'	PyPy- β -ImIm- γ -PyPy- β -HpIm
	628 β) 5'-W C A A G C W-3'	PyPy- β -ImPy- γ -ImPy- β -HpIm
	629 β) 5'-W C A A C T W-3'	PyPyPyPyHp- γ -PyIm- β -HpIm
	629 β p) 5'-W C A A C T W-3'	PyPy- β -PyHp- γ -PyIm- β -HpIm
	630 β) 5'-W C A A C A W-3'	PyPyPyPyPy- γ -HpIm- β -HpIm
20	630 β p) 5'-W C A A C A W-3'	PyPy- β -PyPy- γ -HpIm- β -HpIm
	631 β) 5'-W C A A C G W-3'	PyPy- β -PyIm- γ -PyIm- β -HpIm
	632 β) 5'-W C A A C C W-3'	PyPyPyPyPy- γ -ImIm- β -HpIm
	632 β p) 5'-W C A A C C W-3'	PyPy- β -PyPy- γ -ImIm- β -HpIm

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TABLE 65: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCASNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	633 β) 5'-W C A G T T W-3'	Py- β -ImHpHp- γ -PyPy- β -HpIm
5	634 β) 5'-W C A G T A W-3'	Py- β -ImHpPy- γ -HpPy- β -HpIm
	635 β) 5'-W C A G T G W-3'	Py- β -ImHpIm- γ -PyPy- β -HpIm
	636 β) 5'-W C A G T C W-3'	Py- β -ImHpPy- γ -ImPy- β -HpIm
	637 β) 5'-W C A G A T W-3'	Py- β -ImPyHp- γ -PyHp- β -HpIm
	638 β) 5'-W C A G A A W-3'	Py- β -ImPyPy- γ -HpHp- β -HpIm
10	639 β) 5'-W C A G A G W-3'	Py- β -ImPyIm- γ -PyHp- β -HpIm
	640 β) 5'-W C A G A C W-3'	Py- β -ImPyPy- γ -ImHp- β -HpIm
	641 β) 5'-W C A G G T W-3'	Py- β -ImImHp- γ -PyPy- β -HpIm
	642 β) 5'-W C A G G A W-3'	Py- β -ImImPy- γ -HpPy- β -HpIm
	643 β) 5'-W C A G C T W-3'	Py- β -ImPyHp- γ -PyIm- β -HpIm
	644 β) 5'-W C A G C A W-3'	Py- β -ImPyPy- γ -HpIm- β -HpIm
	645 β) 5'-W C A G G G W-3'	Py- β -ImImIm- γ -PyPy- β -HpIm
	646 β) 5'-W C A G G C W-3'	Py- β -ImImPy- γ -ImPy- β -HpIm
	647 β) 5'-W C A G C G W-3'	Py- β -ImPyIm- γ -PyIm- β -HpIm
	648 β) 5'-W C A G C C W-3'	Py- β -ImPyPy- γ -ImIm- β -HpIm
20	649 β) 5'-W C A C T T W-3'	PyPyPyHpHp- γ -Py- β -ImHpIm
	649 β p) 5'-W C A C T T W-3'	PyPyPy- β -Hp- γ -Py- β -ImHpIm
	650 β) 5'-W C A C T A W-3'	PyPyPyHpPy- γ -Hp- β -ImHpIm
	650 β p) 5'-W C A C T A W-3'	PyPyPy- β -Py- γ -Hp- β -ImHpIm
	651 β) 5'-W C A C T G W-3'	PyPy- β -HpIm- γ -Py- β -ImHpIm
25	652 β) 5'-W C A C T C W-3'	PyPyPyHpPy- γ -Im- β -ImHpIm
	652 β p) 5'-W C A C T C W-3'	PyPyPy- β -Py- γ -Im- β -ImHpIm
	653 β) 5'-W C A C A T W-3'	PyPyPyPyHp- γ -Py- β -ImHpIm
	653 β p) 5'-W C A C A T W-3'	PyPyPy- β -Hp- γ -Py- β -ImHpIm
	654 β) 5'-W C A C A A W-3'	PyPyPyPyPy- γ -Hp- β -ImHpIm
30	654 β p) 5'-W C A C A A W-3'	PyPyPy- β -Py- γ -Hp- β -ImHpIm
	655 β) 5'-W C A C A G W-3'	PyPy- β -PyIm- γ -Py- β -ImHpIm

TABLE 65 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCASNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	656 β) 5'-W C A C A C W-3'	PyPyPyPyPy- γ -Im- β -ImHpIm
	656 β p) 5'-W C A C A C W-3'	PyPyPy- β -Py- γ -Im- β -ImHpIm
5	657 β) 5'-W C A C G T W-3'	PyPy- β -ImHp- γ -Py- β -ImHpIm
	658 β p) 5'-W C A C G A W-3'	PyPy- β -ImPy- γ -Hp- β -ImHpIm
	659 β) 5'-W C A C C T W-3'	PyPyPyPyHp- γ -PyImIm- β -Im
	659 β p) 5'-W C A C C T W-3'	Py- β -PyPyHp- γ -PyImIm- β -Im
	660 β) 5'-W C A C C A W-3'	PyPyPyPyPy- γ -HpImIm- β -Im
10	660 β p) 5'-W C A C C A W-3'	Py- β -PyPyPy- γ -HpImIm- β -Im
	661 β) 5'-W C A C G G W-3'	PyPy- β -ImIm- γ -Py- β -ImHpIm
	662 β) 5'-W C A C G C W-3'	PyPy- β -ImPy- γ -Im- β -ImHpIm
	663 β) 5'-W C A C C G W-3'	PyPy- β -PyIm- γ -PyImIm- β -Im
	664 β) 5'-W C A C C C W-3'	PyPyPyPyPy- γ -ImImIm- β -Im
	664 β p) 5'-W C A C C C W-3'	Py- β -PyPyPy- γ -ImImIm- β -Im

TABLE 66: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCCWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	665 β) 5'-W C C T T T W-3'	PyPyHpHpHp- γ -PyPy- β -ImIm
5	665 β p) 5'-W C C T T T W-3'	PyPy- β -HpHp- γ -PyPy- β -ImIm
	666 β) 5'-W C C T T A W-3'	PyPyHpHpPy- γ -HpPy- β -ImIm
	666 β p) 5'-W C C T T A W-3'	PyPy- β -HpPy- γ -HpPy- β -ImIm
	667 β) 5'-W C C T T G W-3'	PyPy- β -HpIm- γ -PyPy- β -ImIm
	668 β) 5'-W C C T T C W-3'	PyPyHpHpPy- γ -ImPy- β -ImIm
10	668 β p) 5'-W C C T T C W-3'	PyPy- β -HpPy- γ -ImPy- β -ImIm
	669 β) 5'-W C C T A T W-3'	PyPyHpPyHp- γ -PyHp- β -ImIm
	669 β p) 5'-W C C T A T W-3'	PyPy- β -PyHp- γ -PyHp- β -ImIm
	670 β) 5'-W C C T A A W-3'	PyPyHpPyPy- γ -HpHp- β -ImIm
	670 β p) 5'-W C C T A A W-3'	PyPy- β -PyPy- γ -HpHp- β -ImIm
15	671 β) 5'-W C C T A G W-3'	PyPy- β -PyIm- γ -PyHp- β -ImIm
	672 β) 5'-W C C T A C W-3'	PyPyHpPyPy- γ -ImHp- β -ImIm
	672 β p) 5'-W C C T A C W-3'	PyPy- β -PyPy- γ -ImHp- β -ImIm
	673 β) 5'-W C C T G T W-3'	PyPy- β -ImHp- γ -PyPy- β -ImIm
	674 β) 5'-W C C T G A W-3'	PyPy- β -ImPy- γ -HpPy- β -ImIm
20	675 β) 5'-W C C T G G W-3'	PyPy- β -ImIm- γ -PyPy- β -ImIm
	676 β) 5'-W C C T G C W-3'	PyPy- β -ImPy- γ -ImPy- β -ImIm
	677 β) 5'-W C C T C T W-3'	PyPyHpPyHp- γ -PyIm- β -ImIm
	677 β p) 5'-W C C T C T W-3'	PyPy- β -PyHp- γ -PyIm- β -ImIm
	678 β) 5'-W C C T C A W-3'	PyPyHpPyPy- γ -HpIm- β -ImIm
25	678 β p) 5'-W C C T C A W-3'	PyPy- β -PyPy- γ -HpIm- β -ImIm
	679 β) 5'-W C C T C G W-3'	PyPy- β -PyIm- γ -PyIm- β -ImIm
	680 β) 5'-W C C T C C W-3'	PyPyHpPyPy- γ -ImIm- β -ImIm
	680 β p) 5'-W C C T C C W-3'	PyPy- β -PyPy- γ -ImIm- β -ImIm
	681 β) 5'-W C C A T T W-3'	PyPyPyHpHp- γ -PyPy- β -ImIm
30	681 β p) 5'-W C C A T T W-3'	PyPy- β -HpHp- γ -PyPy- β -ImIm
	682 β) 5'-W C C A T A W-3'	PyPyPyHpPy- γ -HpPy- β -ImIm
	682 β p) 5'-W C C A T A W-3'	PyPy- β -HpPy- γ -HpPy- β -ImIm

TABLE 66: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCCWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	683 β) 5'-W C C A T G W-3'	PyPy- β -HpIm- γ -PyPy- β -ImIm
5	684 β) 5'-W C C A T C W-3'	PyPyPyHpPy- γ -ImPy- β -ImIm
	684 β p) 5'-W C C A T C W-3'	PyPy- β -HpPy- γ -ImPy- β -ImIm
	685 β) 5'-W C C A A T W-3'	PyPyPyPyHp- γ -PyHp- β -ImIm
	685 β p) 5'-W C C A A T W-3'	PyPy- β -PyHp- γ -PyHp- β -ImIm
	686 β) 5'-W C C A A A W-3'	PyPyPyPyPy- γ -HpHp- β -ImIm
10	686 β p) 5'-W C C A A A W-3'	PyPy- β -PyPy- γ -HpHp- β -ImIm
	687 β) 5'-W C C A A G W-3'	PyPy- β -PyIm- γ -PyHp- β -ImIm
	688 β) 5'-W C C A A C W-3'	PyPyPyPyPy- γ -ImHp- β -ImIm
	688 β p) 5'-W C C A A C W-3'	PyPy- β -PyPy- γ -ImHp- β -ImIm
	689 β) 5'-W C C A G T W-3'	PyPy- β -ImHp- γ -PyPy- β -ImIm
	690 β) 5'-W C C A G A W-3'	PyPy- β -ImPy- γ -HpPy- β -ImIm
	691 β) 5'-W C C A G G W-3'	PyPy- β -ImIm- γ -PyPy- β -ImIm
	692 β) 5'-W C C A G C W-3'	PyPy- β -ImPy- γ -ImPy- β -ImIm
	693 β) 5'-W C C A C T W-3'	PyPyPyPyHp- γ -PyIm- β -ImIm
	693 β p) 5'-W C C A C T W-3'	PyPy- β -PyHp- γ -PyIm- β -ImIm
20	694 β) 5'-W C C A C A W-3'	PyPyPyPyPy- γ -HpIm- β -ImIm
	694 β p) 5'-W C C A C A W-3'	PyPy- β -PyPy- γ -HpIm- β -ImIm
	695 β) 5'-W C C A C G W-3'	PyPy- β -PyIm- γ -PyIm- β -ImIm
	696 β) 5'-W C C A C C W-3'	PyPyPyPyPy- γ -ImIm- β -ImIm
	696 β p) 5'-W C C A C C W-3'	PyPy- β -PyPy- γ -ImIm- β -ImIm

TABLE 67: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WCCSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	697 β) 5'-W C C G T T W-3'	Py- β -ImHpHp- γ -PyPy- β -ImIm
5	698 β) 5'-W C C G T A W-3'	Py- β -ImHpPy- γ -HpPy- β -ImIm
	699 β) 5'-W C C G T G W-3'	Py- β -ImHpIm- γ -PyPy- β -ImIm
	700 β) 5'-W C C G T C W-3'	Py- β -ImHpPy- γ -ImPy- β -ImIm
	701 β) 5'-W C C G A T W-3'	Py- β -ImPyHp- γ -PyHp- β -ImIm
	702 β) 5'-W C C G A A W-3'	Py- β -ImPyPy- γ -HpHp- β -ImIm
10	703 β) 5'-W C C G A G W-3'	Py- β -ImPyIm- γ -PyHp- β -ImIm
	704 β) 5'-W C C G A C W-3'	Py- β -ImPyPy- γ -ImHp- β -ImIm
	705 β) 5'-W C C G G T W-3'	Py- β -ImImHp- γ -PyPy- β -ImIm
	706 β) 5'-W C C G G A W-3'	Py- β -ImImPy- γ -HpPy- β -ImIm
	707 β) 5'-W C C G C T W-3'	Py- β -ImPyHp- γ -PyIm- β -ImIm
	708 β) 5'-W C C G C A W-3'	Py- β -ImPyPy- γ -HpIm- β -ImIm
	709 β) 5'-W C C C T T W-3'	PyPyPyHpHp- γ -Py- β -ImImIm
	709 β p) 5'-W C C C T T W-3'	PyPyPy- β -Hp- γ -Py- β -ImImIm
	710 β) 5'-W C C C T A W-3'	PyPyPyHpPy- γ -Hp- β -ImImIm
	710 β p) 5'-W C C C T A W-3'	PyPyPy- β -Py- γ -Hp- β -ImImIm
20	711 β) 5'-W C C C T G W-3'	PyPy- β -HpIm- γ -Py- β -ImImIm
	712 β) 5'-W C C C T C W-3'	PyPyPyHpPy- γ -Im- β -ImImIm
	712 β p) 5'-W C C C T C W-3'	PyPyPy- β -Py- γ -Im- β -ImImIm
	713 β) 5'-W C C C A T W-3'	PyPyPyPyHp- γ -Py- β -ImImIm
	713 β p) 5'-W C C C A T W-3'	PyPyPy- β -Hp- γ -Py- β -ImImIm
25	714 β) 5'-W C C C A A W-3'	PyPyPyPyPy- γ -Hp- β -ImImIm
	714 β p) 5'-W C C C A A W-3'	PyPyPy- β -Py- γ -Hp- β -ImImIm
	715 β) 5'-W C C C A G W-3'	PyPy- β -PyIm- γ -Py- β -ImImIm
	716 β) 5'-W C C C A C W-3'	PyPyPyPyPy- γ -Im- β -ImImIm
	716 β p) 5'-W C C C A C W-3'	PyPyPy- β -Py- γ -Im- β -ImImIm
30	717 β) 5'-W C C C G T W-3'	PyPy- β -ImHp- γ -Py- β -ImImIm
	718 β) 5'-W C C C G A W-3'	PyPy- β -ImPy- γ -Hp- β -ImImIm

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TABLE 68: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WAGWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	723 β) 5'-W A G T T G W-3'	PyIm- β -HpIm- γ -PyPyPyPyHp
5	723 β p) 5'-W A G T T G W-3'	PyIm- β -HpIm- γ -PyPy- β -PyHp
	727 β) 5'-W A G T A G W-3'	PyIm- β -PyIm- γ -PyHpPyPyHp
	727 β p) 5'-W A G T A G W-3'	PyIm- β -PyIm- γ -PyHp- β -PyHp
	729 β) 5'-W A G T G T W-3'	PyIm- β -ImHp- γ -PyPyPyPyHp
	729 β p) 5'-W A G T G T W-3'	PyIm- β -ImHp- γ -PyPy- β -PyHp
10	730 β) 5'-W A G T G A W-3'	PyIm- β -ImPy- γ -HpPyPyPyHp
	730 β p) 5'-W A G T G A W-3'	PyIm- β -ImPy- γ -HpPy- β -PyHp
	731 β) 5'-W A G T G G W-3'	PyIm- β -ImIm- γ -PyPyPyPyHp
	731 β p) 5'-W A G T G G W-3'	PyIm- β -ImIm- γ -PyPy- β -PyHp
	732 β) 5'-W A G T G C W-3'	PyIm- β -ImPy- γ -ImPyPyPyHp
	732 β p) 5'-W A G T G C W-3'	PyIm- β -ImPy- γ -ImPy- β -PyHp
	735 β) 5'-W A G T C G W-3'	PyIm- β -PyIm- γ -PyImPyPyHp
	735 β p) 5'-W A G T C G W-3'	PyIm- β -PyIm- γ -PyIm- β -PyHp
	739 β) 5'-W A G A T G W-3'	PyIm- β -HpIm- γ -PyPyHpPyHp
	739 β p) 5'-W A G A T G W-3'	PyIm- β -HpIm- γ -PyPy- β -PyHp
20	743 β) 5'-W A G A A G W-3'	PyIm- β -PyIm- γ -PyHpHpPyHp
	743 β p) 5'-W A G A A G W-3'	PyIm- β -PyIm- γ -PyHp- β -PyHp
	745 β) 5'-W A G A G T W-3'	PyIm- β -ImHp- γ -PyPyHpPyHp
	745 β p) 5'-W A G A G T W-3'	PyIm- β -ImHp- γ -PyPy- β -PyHp
	746 β) 5'-W A G A G A W-3'	PyIm- β -ImPy- γ -HpPyHpPyHp
25	746 β p) 5'-W A G A G A W-3'	PyIm- β -ImPy- γ -HpPy- β -PyHp
	747 β) 5'-W A G A G G W-3'	PyIm- β -ImIm- γ -PyPyHpPyHp
	747 β p) 5'-W A G A G G W-3'	PyIm- β -ImIm- γ -PyPy- β -PyHp
	748 β) 5'-W A G A G C W-3'	PyIm- β -ImPy- γ -ImPyHpPyHp
	748 β p) 5'-W A G A G C W-3'	PyIm- β -ImPy- γ -ImPy- β -PyHp
30	751 β) 5'-W A G A C G W-3'	PyIm- β -PyIm- γ -PyImHpPyHp
	751 β p) 5'-W A G A C G W-3'	PyIm- β -PyIm- γ -PyIm- β -PyHp

TABLE 69: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WAGSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	753 β) 5'-W A G G T T W-3'	PyImIm- β -Hp- γ -PyPyPyPyHp
5	753 β p) 5'-W A G G T T W-3'	PyImIm- β -Hp- γ -Py- β -PyPyHp
	754 β) 5'-W A G G T A W-3'	PyImIm- β -Py- γ -HpPyPyPyHp
	754 β p) 5'-W A G G T A W-3'	PyImIm- β -Py- γ -Hp- β -PyPyHp
	755 β) 5'-W A G G T G W-3'	PyImIm- β -Im- γ -PyPyPyPyHp
	755 β p) 5'-W A G G T G W-3'	PyImIm- β -Im- γ -Py- β -PyPyHp
10	756 β) 5'-W A G G T C W-3'	PyImIm- β -Py- γ -ImPyPyPyHp
	756 β p) 5'-W A G G T C W-3'	PyImIm- β -Py- γ -Im- β -PyPyHp
	757 β) 5'-W A G G A T W-3'	PyImIm- β -Hp- γ -PyHpPyPyHp
	757 β p) 5'-W A G G A T W-3'	PyImIm- β -Hp- γ -Py- β -PyPyHp
	758 β) 5'-W A G G A A W-3'	PyImIm- β -Py- γ -HpHpPyPyHp
	758 β p) 5'-W A G G A A W-3'	PyImIm- β -Py- γ -Hp- β -PyPyHp
	759 β) 5'-W A G G A G W-3'	PyImIm- β -Im- γ -PyHpPyPyHp
	759 β p) 5'-W A G G A G W-3'	PyImIm- β -Im- γ -Py- β -PyPyHp
	760 β) 5'-W A G G A C W-3'	PyImIm- β -Py- γ -ImHpPyPyHp
	760 β p) 5'-W A G G A C W-3'	PyImIm- β -Py- γ -Im- β -PyPyHp
20	763 β) 5'-W A G G C T W-3'	PyImIm- β -Hp- γ -PyImPyPyHp
	764 β) 5'-W A G G C A W-3'	PyImIm- β -Py- γ -HpImPyPyHp
	765 β) 5'-W A G C T T W-3'	PyImPyHpHp- γ -Py- β -ImPyHp
	765 β p) 5'-W A G C T T W-3'	PyImPy- β -Hp- γ -Py- β -ImPyHp
	766 β) 5'-W A G C T A W-3'	PyImPyHpPy- γ -Hp- β -ImPyHp
25	766 β p) 5'-W A G C T A W-3'	PyImPy- β -Py- γ -Hp- β -ImPyHp
	767 β) 5'-W A G C T G W-3'	PyIm- β -HpIm- γ -Py- β -ImPyHp
	768 β) 5'-W A G C T C W-3'	PyImPyHpPy- γ -Im- β -ImPyHp
	768 β p) 5'-W A G C T C W-3'	PyImPy- β -Py- γ -Im- β -ImPyHp
	769 β) 5'-W A G C A T W-3'	PyImPyPyHp- γ -Py- β -ImPyHp
30	769 β p) 5'-W A G C A T W-3'	PyImPy- β -Hp- γ -Py- β -ImPyHp
	770 β) 5'-W A G C A A W-3'	PyImPyPyPy- γ -Hp- β -ImPyHp

TABLE 69 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WAGSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
5	770 β p) 5'-W A G C A A W-3'	PyImPy- β -Py- γ -Hp- β -ImPyHp
	771 β) 5'-W A G C A G W-3'	PyIm- β -PyIm- γ -Py- β -ImPyHp
	772 β) 5'-W A G C A C W-3'	PyImPyPyPy- γ -Im- β -ImPyHp
	772 β p) 5'-W A G C A C W-3'	PyImPy- β -Py- γ -Im- β -ImPyHp
	773 β) 5'-W A G C G T W-3'	PyIm- β -ImHp- γ -Py- β -ImPyHp
10	774 β) 5'-W A G C G A W-3'	PyIm- β -ImPy- γ -Hp- β -ImPyHp
	775 β) 5'-W A G C C T W-3'	PyImPyPyHp- γ -PyImIm- β -Hp
	776 β) 5'-W A G C C A W-3'	PyImPyPyPy- γ -HpImIm- β -Hp
	779 β) 5'-W A G G C G W-3'	PyImIm- β -Im- γ -PyImPyPyHp
	780 β) 5'-W A G G C C W-3'	PyImIm- β -Py- γ -ImImPyPyHp
	781 β) 5'-W A G C G G W-3'	PyIm- β -ImIm- γ -Py- β -ImPyHp
	782 β) 5'-W A G C G C W-3'	PyIm- β -ImPy- γ -Im- β -ImPyHp
	783 β) 5'-W A G C C G W-3'	PyIm- β -PyIm- γ -PyImIm- β -Hp
	784 β) 5'-W A G C C C W-3'	PyImPyPyPy- γ -ImImIm- β -Hp

TABLE 70: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WATWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	787 β) 5'-W A T T T G W-3'	PyHp- β -HpIm- γ -PyPyPyPyHp
5	787 β p) 5'-W A T T T G W-3'	PyHp- β -HpIm- γ -PyPy- β -PyHp
	791 β) 5'-W A T T A G W-3'	PyHp- β -PyIm- γ -PyHpPyPyHp
	791 β p) 5'-W A T T A G W-3'	PyHp- β -PyIm- γ -PyHp- β -PyHp
	793 β) 5'-W A T T G T W-3'	PyHp- β -ImHp- γ -PyPyPyPyHp
	793 β p) 5'-W A T T G T W-3'	PyHp- β -ImHp- γ -PyPy- β -PyHp
10	794 β) 5'-W A T T G A W-3'	PyHp- β -ImPy- γ -HpPyPyPyHp
	794 β p) 5'-W A T T G A W-3'	PyHp- β -ImPy- γ -HpPy- β -PyHp
	795 β) 5'-W A T T G G W-3'	PyHp- β -ImIm- γ -PyPyPyPyHp
	795 β p) 5'-W A T T G G W-3'	PyHp- β -ImPy- γ -ImPyPyPyHp
	796 β p) 5'-W A T T G C W-3'	PyHp- β -ImPy- γ -ImPy- β -PyHp
15	799 β) 5'-W A T T C G W-3'	PyHp- β -PyIm- γ -PyImPyPyHp
	799 β p) 5'-W A T T C G W-3'	PyHp- β -PyIm- γ -PyIm- β -PyHp
	803 β) 5'-W A T A T G W-3'	PyHp- β -HpIm- γ -PyPyHpPyHp
	803 β p) 5'-W A T A T G W-3'	PyHp- β -HpIm- γ -PyPy- β -PyHp
	807 β) 5'-W A T A A G W-3'	PyHp- β -PyIm- γ -PyHpHpPyHp
20	807 β p) 5'-W A T A A G W-3'	PyHp- β -PyIm- γ -PyHp- β -PyHp
	809 β) 5'-W A T A G T W-3'	PyHp- β -ImHp- γ -PyPyHpPyHp
	809 β p) 5'-W A T A G T W-3'	PyHp- β -ImHp- γ -PyPy- β -PyHp
	810 β) 5'-W A T A G A W-3'	PyHp- β -ImPy- γ -HpPyHpPyHp
	810 β p) 5'-W A T A G A W-3'	PyHp- β -ImPy- γ -HpPy- β -PyHp
25	811 β) 5'-W A T A G G W-3'	PyHp- β -ImIm- γ -PyPyHpPyHp
	811 β p) 5'-W A T A G G W-3'	PyHp- β -ImIm- γ -PyPy- β -PyHp
	812 β) 5'-W A T A G C W-3'	PyHp- β -ImPy- γ -ImPyHpPyHp
	812 β p) 5'-W A T A G C W-3'	PyHp- β -ImPy- γ -ImPy- β -PyHp
	815 β) 5'-W A T A C G W-3'	PyHp- β -PyIm- γ -PyImHpPyHp
30	815 β p) 5'-W A T A C G W-3'	PyHp- β -PyIm- γ -PyIm- β -PyHp

TABLE 71: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WATSNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	817 β) 5'-W A T G T T W-3'	Py- β -ImHpHp- γ -PyPyPyPyHp
5	817 β p) 5'-W A T G T T W-3'	Py- β -ImHpHp- γ -PyPyPy- β -Hp
	818 β) 5'-W A T G T A W-3'	Py- β -ImHpPy- γ -HpPyPyPyHp
	818 β p) 5'-W A T G T A W-3'	Py- β -ImHpPy- γ -HpPyPy- β -Hp
	819 β) 5'-W A T G T G W-3'	Py- β -ImHpIm- γ -PyPyPyPyHp
	819 β p) 5'-W A T G T G W-3'	Py- β -ImHpIm- γ -PyPyPy- β -Hp
10	820 β) 5'-W A T G T C W-3'	Py- β -ImHpPy- γ -ImPyPyPyHp
	820 β p) 5'-W A T G T C W-3'	Py- β -ImHpPy- γ -ImPyPy- β -Hp
	821 β) 5'-W A T G A T W-3'	Py- β -ImPyHp- γ -PyHpPyPyHp
	821 β p) 5'-W A T G A T W-3'	Py- β -ImPyHp- γ -PyHpPy- β -Hp
	822 β) 5'-W A T G A A W-3'	Py- β -ImPyPy- γ -HpHpPyPyHp
	822 β p) 5'-W A T G A A W-3'	Py- β -ImPyPy- γ -HpHpPy- β -Hp
	823 β) 5'-W A T G A G W-3'	Py- β -ImPyIm- γ -PyHpPyPyHp
	823 β p) 5'-W A T G A G W-3'	Py- β -ImPyIm- γ -PyHpPy- β -Hp
	824 β) 5'-W A T G A C W-3'	Py- β -ImPyPy- γ -ImHpPyPyHp
	824 β p) 5'-W A T G A C W-3'	Py- β -ImPyPy- γ -ImHpPy- β -Hp
20	825 β) 5'-W A T G G T W-3'	Py- β -ImImHp- γ -PyPyPyPyHp
	825 β p) 5'-W A T G G T W-3'	Py- β -ImImHp- γ -PyPyPy- β -Hp
	826 β) 5'-W A T G G A W-3'	Py- β -ImImPy- γ -HpPyPyPyHp
	826 β p) 5'-W A T G G A W-3'	Py- β -ImImPy- γ -HpPyPy- β -Hp
	827 β) 5'-W A T G C T W-3'	Py- β -ImPyHp- γ -PyImPyPyHp
25	827 β p) 5'-W A T G C T W-3'	Py- β -ImPyHp- γ -PyImPy- β -Hp
	828 β) 5'-W A T G C A W-3'	Py- β -ImPyPy- γ -HpImPyPyHp
	828 β p) 5'-W A T G C A W-3'	Py- β -ImPyPy- γ -HpImPy- β -Hp
	829 β) 5'-W A T G G G W-3'	Py- β -ImImIm- γ -PyPyPyPyHp
	829 β p) 5'-W A T G G G W-3'	Py- β -ImImIm- γ -PyPyPy- β -Hp
30	830 β) 5'-W A T G G C W-3'	Py- β -ImImPy- γ -ImPyPyPyHp
	830 β p) 5'-W A T G G C W-3'	Py- β -ImImPy- γ -ImPyPy- β -Hp
	831 β) 5'-W A T G C G W-3'	Py- β -ImPyIm- γ -PyImPyPyHp
	831 β p) 5'-W A T G C G W-3'	Py- β -ImPyIm- γ -PyImPy- β -Hp

TABLE 71: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WATSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	832 β) 5'-W A T G C C W-3'	Py- β -ImPyPy- γ -ImImPyPyHp
5	832 β p) 5'-W A T G C C W-3'	Py- β -ImPyPy- γ -ImImPy- β -Hp
	833 β) 5'-W A T C T T W-3'	PyHpPyHpHp- γ -Py- β -ImPyHp
	833 β p) 5'-W A T C T T W-3'	PyHpPy- β -Hp- γ -Py- β -ImPyHp
	834 β) 5'-W A T C T A W-3'	PyHpPyHpPy- γ -Hp- β -ImPyHp
	834 β p) 5'-W A T C T A W-3'	PyHpPy- β -Py- γ -Hp- β -ImPyHp
10	835 β) 5'-W A T C T G W-3'	PyHp- β -HpIm- γ -Py- β -ImPyHp
	836 β) 5'-W A T C T C W-3'	PyHpPyHpPy- γ -Im- β -ImPyHp
	836 β p) 5'-W A T C T C W-3'	PyHpPy- β -Py- γ -Im- β -ImPyHp
	837 β) 5'-W A T C A T W-3'	PyHpPyPyHp- γ -Py- β -ImPyHp
	837 β p) 5'-W A T C A T W-3'	PyHpPy- β -Hp- γ -Py- β -ImPyHp
	838 β) 5'-W A T C A A W-3'	PyHpPyPyPy- γ -Hp- β -ImPyHp
	838 β p) 5'-W A T C A A W-3'	PyHpPy- β -Py- γ -Hp- β -ImPyHp
	839 β) 5'-W A T C A G W-3'	PyHp- β -PyIm- γ -Py- β -ImPyHp
	840 β) 5'-W A T C A C W-3'	PyHpPyPyPy- γ -Im- β -ImPyHp
	840 β p) 5'-W A T C A C W-3'	PyHpPy- β -Py- γ -Im- β -ImPyHp
	841 β) 5'-W A T C G T W-3'	PyHp- β -ImHp- γ -Py- β -ImPyHp
	842 β) 5'-W A T C G A W-3'	PyHp- β -ImPy- γ -Hp- β -ImPyHp
	843 β) 5'-W A T C C T W-3'	PyHpPyPyHp- γ -PyImIm- β -Hp
	843 β p) 5'-W A T C C T W-3'	Py- β -PyPyHp- γ -PyImIm- β -Hp
	844 β) 5'-W A T C C A W-3'	PyHpPyPyPy- γ -HpImIm- β -Hp
25	844 β p) 5'-W A T C C A W-3'	Py- β -PyPyPy- γ -HpImIm- β -Hp
	845 β) 5'-W A T C G G W-3'	PyHp- β -ImIm- γ -Py- β -ImPyHp
	846 β) 5'-W A T C G C W-3'	PyHp- β -ImPy- γ -Im- β -ImPyHp
	847 β) 5'-W A T C C G W-3'	PyHp- β -PyIm- γ -PyImIm- β -Hp
	848 β) 5'-W A T C C C W-3'	PyHpPyPyPy- γ -ImImIm- β -Hp
30	848 β p) 5'-W A T C C C W-3'	Py- β -PyPyPy- γ -ImImIm- β -Hp

TABLE 72: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WAAWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	851 β) 5'-W A A T T G W-3'	PyPy- β -HpIm- γ -PyPyPyHpHp
5	851 β p) 5'-W A A T T G W-3'	PyPy- β -HpIm- γ -PyPy- β -HpHp
	855 β) 5'-W A A T A G W-3'	PyPy- β -PyIm- γ -PyHpPyHpHp
	855 β p) 5'-W A A T A G W-3'	PyPy- β -PyIm- γ -PyHp- β -HpHp
	857 β) 5'-W A A T G T W-3'	PyPy- β -ImHp- γ -PyPyPyHpHp
	857 β p) 5'-W A A T G T W-3'	PyPy- β -ImHp- γ -PyPy- β -HpHp
10	858 β) 5'-W A A T G A W-3'	PyPy- β -ImPy- γ -HpPyPyHpHp
	858 β p) 5'-W A A T G A W-3'	PyPy- β -ImPy- γ -HpPy- β -HpHp
	859 β) 5'-W A A T G G W-3'	PyPy- β -ImIm- γ -PyPyPyHpHp
	859 β p) 5'-W A A T G G W-3'	PyPy- β -ImIm- γ -PyPy- β -HpHp
15	860 β) 5'-W A A T G C W-3'	PyPy- β -ImPy- γ -ImPyPyHpHp
	860 β p) 5'-W A A T G C W-3'	PyPy- β -ImPy- γ -ImPy- β -HpHp
	863 β) 5'-W A A T C G W-3'	PyPy- β -PyIm- γ -PyImPyHpHp
	863 β p) 5'-W A A T C G W-3'	PyPy- β -PyIm- γ -PyIm- β -HpHp
	867 β) 5'-W A A A T G W-3'	PyPy- β -HpIm- γ -PyPyHpHpHp
	867 β p) 5'-W A A A T G W-3'	PyPy- β -HpIm- γ -PyPy- β -HpHp
20	871 β) 5'-W A A A A G W-3'	PyPy- β -PyIm- γ -PyHpHpHpHp
	871 β p) 5'-W A A A A G W-3'	PyPy- β -PyIm- γ -PyHp- β -HpHp
	873 β) 5'-W A A A G T W-3'	PyPy- β -ImHp- γ -PyPyHpHpHp
	873 β p) 5'-W A A A G T W-3'	PyPy- β -ImHp- γ -PyPy- β -HpHp
	874 β) 5'-W A A A G A W-3'	PyPy- β -ImPy- γ -HpPyHpHpHp
25	874 β p) 5'-W A A A G A W-3'	PyPy- β -ImPy- γ -HpPy- β -HpHp
	875 β) 5'-W A A A G G W-3'	PyPy- β -ImIm- γ -PyPyHpHpHp
	875 β p) 5'-W A A A G G W-3'	PyPy- β -ImIm- γ -PyPy- β -HpHp
	876 β) 5'-W A A A G C W-3'	PyPy- β -ImPy- γ -ImPyHpHpHp
	876 β p) 5'-W A A A G C W-3'	PyPy- β -ImPy- γ -ImPy- β -HpHp
30	879 β) 5'-W A A A C G W-3'	PyPy- β -PyIm- γ -PyImHpHpHp
	879 β p) 5'-W A A A C G W-3'	PyPy- β -PyIm- γ -PyIm- β -HpHp

TABLE 73: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WAASNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	881 β) 5'-W A A G T T W-3'	Py- β -ImHpHp- γ -PyPyPyHpHp
5	881 β p) 5'-W A A G T T W-3'	Py- β -ImHpHp- γ -PyPyPy- β -Hp
	882 β) 5'-W A A G T A W-3'	Py- β -ImHpPy- γ -HpPyPyHpHp
	882 β p) 5'-W A A G T A W-3'	Py- β -ImHpPy- γ -HpPyPy- β -Hp
	883 β) 5'-W A A G T G W-3'	Py- β -ImHpIm- γ -PyPyPyHpHp
	883 β p) 5'-W A A G T G W-3'	Py- β -ImHpIm- γ -PyPyPy- β -Hp
10	884 β) 5'-W A A G T C W-3'	Py- β -ImHpPy- γ -ImPyPyHpHp
	884 β p) 5'-W A A G T C W-3'	Py- β -ImHpPy- γ -ImPyPy- β -Hp
	885 β) 5'-W A A G A T W-3'	Py- β -ImPyHp- γ -PyHpPyHpHp
	885 β p) 5'-W A A G A T W-3'	Py- β -ImPyHp- γ -PyHpPy- β -Hp
	886 β) 5'-W A A G A A W-3'	Py- β -ImPyPy- γ -HpHpPyHpHp
	886 β p) 5'-W A A G A A W-3'	Py- β -ImPyPy- γ -HpHpPy- β -Hp
	887 β) 5'-W A A G A G W-3'	Py- β -ImPyIm- γ -PyHpPyHpHp
	887 β p) 5'-W A A G A G W-3'	Py- β -ImPyIm- γ -PyHpPy- β -Hp
	888 β) 5'-W A A G A C W-3'	Py- β -ImPyPy- γ -ImHpPyHpHp
	888 β p) 5'-W A A G A C W-3'	Py- β -ImPyPy- γ -ImHpPy- β -Hp
20	889 β) 5'-W A A G G T W-3'	Py- β -ImImHp- γ -PyPyPyHpHp
	889 β p) 5'-W A A G G T W-3'	Py- β -ImImHp- γ -PyPyPy- β -Hp
	890 β) 5'-W A A G G A W-3'	Py- β -ImImPy- γ -HpPyPyHpHp
	890 β p) 5'-W A A G G A W-3'	Py- β -ImImPy- γ -HpPyPy- β -Hp
	891 β) 5'-W A A G C T W-3'	Py- β -ImPyHp- γ -PyImPyHpHp
25	891 β p) 5'-W A A G C T W-3'	Py- β -ImPyHp- γ -PyImPy- β -Hp
	892 β) 5'-W A A G C A W-3'	Py- β -ImPyPy- γ -HpImPyHpHp
	892 β p) 5'-W A A G C A W-3'	Py- β -ImPyPy- γ -HpImPy- β -Hp
	893 β) 5'-W A A G G G W-3'	Py- β -ImImIm- γ -PyPyPyHpHp
	893 β p) 5'-W A A G G G W-3'	Py- β -ImImIm- γ -PyPyPy- β -Hp
30	894 β) 5'-W A A G G C W-3'	Py- β -ImImPy- γ -ImPyPyHpHp
	894 β p) 5'-W A A G G C W-3'	Py- β -ImImPy- γ -ImPyPy- β -Hp
	895 β) 5'-W A A G C G W-3'	Py- β -ImPyIm- γ -PyImPyHpHp
	895 β p) 5'-W A A G C G W-3'	Py- β -ImPyIm- γ -PyImPy- β -Hp

TABLE 73 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WAASNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	896 β) 5'-W A A G C C W-3'	Py- β -ImPyPy- γ -ImImPyHpHp
	896 β p) 5'-W A A G C C W-3'	Py- β -ImPyPy- γ -ImImPy- β -Hp
5	897 β) 5'-W A A C T T W-3'	PyPyPyHpHp- γ -Py- β -ImHpHp
	897 β p) 5'-W A A C T T W-3'	PyPyPy- β -Hp- γ -Py- β -ImHpHp
	898 β) 5'-W A A C T A W-3'	PyPyPyHpPy- γ -Hp- β -ImHpHp
	898 β p) 5'-W A A C T A W-3'	PyPyPy- β -Py- γ -Hp- β -ImHpHp
	899 β) 5'-W A A C T G W-3'	PyPy- β -HpIm- γ -Py- β -ImHpHp
10	900 β) 5'-W A A C T C W-3'	PyPyPyHpPy- γ -Im- β -ImHpHp
	900 β p) 5'-W A A C T C W-3'	PyPyPy- β -Py- γ -Im- β -ImHpHp
	901 β) 5'-W A A C A T W-3'	PyPyPyPyHp- γ -Py- β -ImHpHp
	901 β p) 5'-W A A C A T W-3'	PyPyPy- β -Hp- γ -Py- β -ImHpHp
	902 β) 5'-W A A C A A W-3'	PyPyPyPyPy- γ -Hp- β -ImHpHp
	902 β p) 5'-W A A C A A W-3'	PyPyPy- β -Py- γ -Hp- β -ImHpHp
	903 β) 5'-W A A C A G W-3'	PyPy- β -PyIm- γ -Py- β -ImHpHp
	904 β) 5'-W A A C A C W-3'	PyPyPyPyPy- γ -Im- β -ImHpHp
	904 β p) 5'-W A A C A C W-3'	PyPyPy- β -Py- γ -Im- β -ImHpHp
	905 β) 5'-W A A C G T W-3'	PyPy- β -ImHp- γ -Py- β -ImHpHp
20	906 β) 5'-W A A C G A W-3'	PyPy- β -ImPy- γ -Hp- β -ImHpHp
	907 β) 5'-W A A C C T W-3'	PyPyPyPyHp- γ -PyImIm- β -Hp
	907 β p) 5'-W A A C C T W-3'	Py- β -PyPyHp- γ -PyImIm- β -Hp
	908 β) 5'-W A A C C A W-3'	PyPyPyPyPy- γ -HpImIm- β -Hp
	908 β p) 5'-W A A C C A W-3'	Py- β -PyPyPy- γ -HpImIm- β -Hp
25	909 β) 5'-W A A C G G W-3'	PyPy- β -ImIm- γ -Py- β -ImHpHp
	910 β) 5'-W A A C G C W-3'	PyPy- β -ImPy- γ -Im- β -ImHpHp
	911 β) 5'-W A A C C G W-3'	PyPy- β -PyIm- γ -PyImIm- β -Hp
	912 β) 5'-W A A C C C W-3'	PyPyPyPyPy- γ -ImImIm- β -Hp
	912 β p) 5'-W A A C C C W-3'	Py- β -PyPyPy- γ -ImImIm- β -Hp

TABLE 74: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WACWNNW-3' with β substitutions.

DNA sequence		aromatic amino acid sequence
5	913 β) 5'-W A C T T T W-3'	PyPyHpHpHp- γ -PyPy- β -ImHp
	913 β p) 5'-W A C T T T W-3'	PyPy- β -HpHp- γ -PyPy- β -ImHp
	914 β) 5'-W A C T T A W-3'	PyPyHpHpPy- γ -HpPy- β -ImHp
	914 β p) 5'-W A C T T A W-3'	PyPy- β -HpPy- γ -HpPy- β -ImHp
	915 β) 5'-W A C T T G W-3'	PyPy- β -HpIm- γ -PyPy- β -ImHp
	916 β) 5'-W A C T T C W-3'	PyPyHpHpPy- γ -ImPy- β -ImHp
10	916 β p) 5'-W A C T T C W-3'	PyPy- β -HpPy- γ -ImPy- β -ImHp
	917 β) 5'-W A C T A T W-3'	PyPyHpPyHp- γ -PyHp- β -ImHp
	917 β p) 5'-W A C T A T W-3'	PyPyHpPyHp- γ -PyHp- β -ImHp
	918 β) 5'-W A C T A A W-3'	PyPyHpPyPy- γ -HpHp- β -ImHp
	918 β p) 5'-W A C T A A W-3'	PyPy- β -PyPy- γ -HpHp- β -ImHp
	919 β) 5'-W A C T A G W-3'	PyPy- β -PyIm- γ -PyHp- β -ImHp
	920 β) 5'-W A C T A C W-3'	PyPyHpPyPy- γ -ImHp- β -ImHp
	920 β p) 5'-W A C T A C W-3'	PyPy- β -PyPy- γ -ImHp- β -ImHp
	921 β) 5'-W A C T G T W-3'	PyPy- β -ImHp- γ -PyPy- β -ImHp
	922 β) 5'-W A C T G A W-3'	PyPy- β -ImPy- γ -HpPy- β -ImHp
20	923 β) 5'-W A C T G G W-3'	PyPy- β -ImIm- γ -PyPy- β -ImHp
	924 β) 5'-W A C T G C W-3'	PyPy- β -ImPy- γ -ImPy- β -ImHp
	925 β) 5'-W A C T C T W-3'	PyPyHpPyHp- γ -PyIm- β -ImHp
	925 β p) 5'-W A C T C T W-3'	PyPy- β -PyHp- γ -PyIm- β -ImHp
	926 β) 5'-W A C T C A W-3'	PyPyHpPyPy- γ -HpIm- β -ImHp
25	926 β p) 5'-W A C T C A W-3'	PyPy- β -PyPy- γ -HpIm- β -ImHp
	927 β) 5'-W A C T C G W-3'	PyPy- β -PyIm- γ -PyIm- β -ImHp
	928 β) 5'-W A C T C C W-3'	PyPyHpPyPy- γ -ImIm- β -ImHp
	928 β p) 5'-W A C T C C W-3'	PyPy- β -PyPy- γ -ImIm- β -ImHp
	929 β) 5'-W A C A T T W-3'	PyPyPyHpHp- γ -PyPy- β -ImHp
30	929 β p) 5'-W A C A T T W-3'	PyPy- β -HpHp- γ -PyPy- β -ImHp
	930 β) 5'-W A C A T A W-3'	PyPyPyHpPy- γ -HpPy- β -ImHp
	930 β p) 5'-W A C A T A W-3'	PyPy- β -HpPy- γ -HpPy- β -ImHp
	931 β) 5'-W A C A T G W-3'	PyPy- β -HpIm- γ -PyPy- β -ImHp

TABLE 74 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WACWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	932 β) 5'-W A C A T C W-3'	PyPyPyHpPy- γ -ImPy- β -ImHp
5	932 β p) 5'-W A C A T C W-3'	PyPy- β -HpPy- γ -ImPy- β -ImHp
	933 β) 5'-W A C A A T W-3'	PyPyPyPyHp- γ -PyHp- β -ImHp
	933 β p) 5'-W A C A A T W-3'	PyPy- β -PyHp- γ -PyHp- β -ImHp
	934 β) 5'-W A C A A A W-3'	PyPyPyPyPy- γ -HpHp- β -ImHp
	934 β p) 5'-W A C A A A W-3'	PyPy- β -PyPy- γ -HpHp- β -ImHp
10	935 β) 5'-W A C A A G W-3'	PyPy- β -PyIm- γ -PyHp- β -ImHp
	936 β) 5'-W A C A A C W-3'	PyPyPyPyPy- γ -ImHp- β -ImHp
	936 β p) 5'-W A C A A C W-3'	PyPy- β -PyPy- γ -ImHp- β -ImHp
	937 β) 5'-W A C A G T W-3'	PyPy- β -ImHp- γ -PyPy- β -ImHp
	938 β) 5'-W A C A G A W-3'	PyPy- β -ImPy- γ -HpPy- β -ImHp
15	939 β) 5'-W A C A G G W-3'	PyPy- β -ImIm- γ -PyPy- β -ImHp
	940 β) 5'-W A C A G C W-3'	PyPy- β -ImPy- γ -ImPy- β -ImHp
	941 β) 5'-W A C A C T W-3'	PyPyPyPyHp- γ -PyIm- β -ImHp
	941 β p) 5'-W A C A C T W-3'	PyPy- β -PyHp- γ -PyIm- β -ImHp
	942 β) 5'-W A C A C A W-3'	PyPyPyPyPy- γ -HpIm- β -ImHp
20	942 β p) 5'-W A C A C A W-3'	PyPy- β -PyPy- γ -HpIm- β -ImHp
	943 β) 5'-W A C A C G W-3'	PyPy- β -PyIm- γ -PyIm- β -ImHp
	944 β) 5'-W A C A C C W-3'	PyPyPyPyPy- γ -ImIm- β -ImHp
	944 β p) 5'-W A C A C C W-3'	PyPy- β -PyPy- γ -ImIm- β -ImHp

TABLE 75: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WACSNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	945 β) 5'-W A C G T T W-3'	Py- β -ImHpHp- γ -PyPy- β -ImHp
5	946 β) 5'-W A C G T A W-3'	Py- β -ImHpPy- γ -HpPy- β -ImHp
	947 β) 5'-W A C G T G W-3'	Py- β -ImHpIm- γ -PyPy- β -ImHp
	948 β) 5'-W A C G T C W-3'	Py- β -ImHpPy- γ -ImPy- β -ImHp
	949 β) 5'-W A C G A T W-3'	Py- β -ImPyHp- γ -PyHp- β -ImHp
	950 β) 5'-W A C G A A W-3'	Py- β -ImPyPy- γ -HpHp- β -ImHp
10	951 β) 5'-W A C G A G W-3'	Py- β -ImPyIm- γ -PyHp- β -ImHp
	952 β) 5'-W A C G A C W-3'	Py- β -ImPyPy- γ -ImHp- β -ImHp
	953 β) 5'-W A C G G T W-3'	Py- β -ImImHp- γ -PyPy- β -ImHp
	954 β) 5'-W A C G G A W-3'	Py- β -ImImPy- γ -HpPy- β -ImHp
	955 β) 5'-W A C G C T W-3'	Py- β -ImPyHp- γ -PyIm- β -ImHp
	956 β) 5'-W A C G C A W-3'	Py- β -ImPyPy- γ -HpIm- β -ImHp
	957 β) 5'-W A C C T T W-3'	PyPyPyHpHp- γ -Py- β -ImImHp
	957 β p) 5'-W A C C T T W-3'	PyPyPy- β -Hp- γ -Py- β -ImImHp
	958 β) 5'-W A C C T A W-3'	PyPyPyHpPy- γ -Hp- β -ImImHp
	958 β p) 5'-W A C C T A W-3'	PyPyPy- β -Py- γ -Hp- β -ImImHp
20	959 β) 5'-W A C C T G W-3'	PyPy- β -HpIm- γ -Py- β -ImImHp
	960 β) 5'-W A C C T C W-3'	PyPyPyHpPy- γ -Im- β -ImImHp
	960 β p) 5'-W A C C T C W-3'	PyPyPy- β -Py- γ -Im- β -ImImHp
	961 β) 5'-W A C C A T W-3'	PyPyPyPyHp- γ -Py- β -ImImHp
	961 β p) 5'-W A C C A T W-3'	PyPyPy- β -Hp- γ -Py- β -ImImHp
25	962 β) 5'-W A C C A A W-3'	PyPyPyPyPy- γ -Hp- β -ImImHp
	962 β p) 5'-W A C C A A W-3'	PyPyPy- β -Py- γ -Hp- β -ImImHp
	963 β) 5'-W A C C A G W-3'	PyPy- β -PyIm- γ -Py- β -ImImHp
	964 β) 5'-W A C C A C W-3'	PyPyPyPyPy- γ -Im- β -ImImHp
	964 β p) 5'-W A C C A C W-3'	PyPyPy- β -Py- γ -Im- β -ImImHp
30	965 β) 5'-W A C C G T W-3'	PyPy- β -ImHp- γ -Py- β -ImImHp
	966 β) 5'-W A C C G A W-3'	PyPy- β -ImPy- γ -Hp- β -ImImHp
	969 β) 5'-W A C G G G W-3'	Py- β -ImImIm- γ -PyPy- β -ImHp
	970 β) 5'-W A C G G C W-3'	Py- β -ImImPy- γ -ImPy- β -ImHp

TABLE 75 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WACSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
971 β)	5'-W A C G C G W-3'	Py- β -ImPyIm- γ -PyIm- β -ImHp
972 β)	5'-W A C G C C W-3'	Py- β -ImPyPy- γ -ImIm- β -ImHp
973 β)	5'-W A C C G G W-3'	PyPy- β -ImIm- γ -Py- β -ImImHp
974 β)	5'-W A C C G C W-3'	PyPy- β -ImPy- γ -Im- β -ImImHp
975 β)	5'-W A C C C G W-3'	PyPy- β -PyIm- γ -PyImImImHp

TABLE 76: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTGWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	979 β) 5'-W T G T T G W-3'	HpIm- β -HpIm- γ -PyPyPyPyPy
5	979 β p) 5'-W T G T T G W-3'	HpIm- β -HpIm- γ -PyPy- β -PyPy
	983 β) 5'-W T G T A G W-3'	HpIm- β -PyIm- γ -PyHpPyPyPy
	983 β p) 5'-W T G T A G W-3'	HpIm- β -PyIm- γ -PyHp- β -PyPy
	985 β) 5'-W T G T G T W-3'	HpIm- β -ImHp- γ -PyPyPyPyPy
	985 β p) 5'-W T G T G T W-3'	HpIm- β -ImHp- γ -PyPy- β -PyPy
10	986 β) 5'-W T G T G A W-3'	HpIm- β -ImPy- γ -HpPyPyPyPy
	986 β p) 5'-W T G T G A W-3'	HpIm- β -ImPy- γ -HpPy- β -PyPy
	987 β) 5'-W T G T G G W-3'	HpIm- β -ImIm- γ -PyPyPyPyPy
	987 β p) 5'-W T G T G G W-3'	HpIm- β -ImIm- γ -PyPy- β -PyPy
	988 β) 5'-W T G T G C W-3'	HpIm- β -ImPy- γ -ImPyPyPyPy
	988 β p) 5'-W T G T G C W-3'	HpIm- β -ImPy- γ -ImPy- β -PyPy
	991 β) 5'-W T G T C G W-3'	HpIm- β -PyIm- γ -PyImPyPyPy
	991 β p) 5'-W T G T C G W-3'	HpIm- β -PyIm- γ -PyIm- β -PyPy
	995 β) 5'-W T G A T G W-3'	HpIm- β -HpIm- γ -PyPyHpPyPy
	995 β p) 5'-W T G A T G W-3'	HpIm- β -HpIm- γ -PyPy- β -PyPy
20	999 β) 5'-W T G A A G W-3'	HpIm- β -PyIm- γ -PyHpHpPyPy
	999 β p) 5'-W T G A A G W-3'	HpIm- β -PyIm- γ -PyHp- β -PyPy
	1001 β) 5'-W T G A G T W-3'	HpIm- β -ImHp- γ -PyPyHpPyPy
	1001 β p) 5'-W T G A G T W-3'	HpIm- β -ImHp- γ -PyPy- β -PyPy
	1002 β) 5'-W T G A G A W-3'	HpIm- β -ImPy- γ -HpPyHpPyPy
25	1002 β p) 5'-W T G A G A W-3'	HpIm- β -ImPy- γ -HpPy- β -PyPy
	1003 β) 5'-W T G A G G W-3'	HpIm- β -ImIm- γ -PyPyHpPyPy
	1003 β p) 5'-W T G A G G W-3'	HpIm- β -ImIm- γ -PyPy- β -PyPy
	1004 β) 5'-W T G A G C W-3'	HpIm- β -ImPy- γ -ImPyHpPyPy
	1004 β p) 5'-W T G A G C W-3'	HpIm- β -ImPy- γ -ImPy- β -PyPy
30	1007 β) 5'-W T G A C G W-3'	HpIm- β -PyIm- γ -PyImHpPyPy
	1007 β p) 5'-W T G A C G W-3'	HpIm- β -PyIm- γ -PyIm- β -PyPy

TABLE 77: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTGSNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	1009 β) 5'-W T G G T T W-3'	HpImIm- β -Hp- γ -PyPyPyPyPy
5	1009 β p) 5'-W T G G T T W-3'	HpImIm- β -Hp- γ -Py- β -PyPyPy
	1010 β) 5'-W T G G T A W-3'	HpImIm- β -Py- γ -HpPyPyPyPy
	1010 β p) 5'-W T G G T A W-3'	HpImIm- β -Py- γ -Hp- β -PyPyPy
	1011 β) 5'-W T G G T G W-3'	HpImIm- β -Im- γ -PyPyPyPyPy
	1011 β p) 5'-W T G G T G W-3'	HpImIm- β -Im- γ -Py- β -PyPyPy
10	1012 β) 5'-W T G G T C W-3'	HpImIm- β -Py- γ -ImPyPyPyPy
	1012 β p) 5'-W T G G T C W-3'	HpImIm- β -Py- γ -Im- β -PyPyPy
	1013 β) 5'-W T G G A T W-3'	HpImIm- β -Hp- γ -PyHpPyPyPy
	1013 β p) 5'-W T G G A T W-3'	HpImIm- β -Hp- γ -Py- β -PyPyPy
	1014 β) 5'-W T G G A A W-3'	HpImIm- β -Py- γ -HpHpPyPyPy
	1014 β p) 5'-W T G G A A W-3'	HpImIm- β -Py- γ -Hp- β -PyPyPy
	1015 β) 5'-W T G G A G W-3'	HpImIm- β -Im- γ -PyHpPyPyPy
	1015 β p) 5'-W T G G A G W-3'	HpImIm- β -Im- γ -Py- β -PyPyPy
	1016 β) 5'-W T G G A C W-3'	HpImIm- β -Py- γ -ImHpPyPyPy
	1016 β p) 5'-W T G G A C W-3'	HpImIm- β -Py- γ -Im- β -PyPyPy
20	1019 β) 5'-W T G G C T W-3'	HpImIm- β -Hp- γ -PyImPyPyPy
	1020 β) 5'-W T G G C A W-3'	HpImIm- β -Py- γ -HpImPyPyPy
	1021 β) 5'-W T G C T T W-3'	HpImPyHpHp- γ -Py- β -ImPyPy
	1021 β p) 5'-W T G C T T W-3'	HpImPy- β -Hp- γ -Py- β -ImPyPy
	1022 β) 5'-W T G C T A W-3'	HpImPyHpPy- γ -Hp- β -ImPyPy
25	1022 β p) 5'-W T G C T A W-3'	HpImPy- β -Py- γ -Hp- β -ImPyPy
	1023 β) 5'-W T G C T G W-3'	HpIm- β -HpIm- γ -Py- β -ImPyPy
	1024 β) 5'-W T G C T C W-3'	HpImPyHpPy- γ -Im- β -ImPyPy
	1024 β p) 5'-W T G C T C W-3'	HpImPy- β -Py- γ -Im- β -ImPyPy
	1025 β) 5'-W T G C A T W-3'	HpImPyPyHp- γ -Py- β -ImPyPy
30	1025 β p) 5'-W T G C A T W-3'	HpImPy- β -Hp- γ -Py- β -ImPyPy
	1026 β) 5'-W T G C A A W-3'	HpImPyPyPy- γ -Hp- β -ImPyPy
	1026 β p) 5'-W T G C A A W-3'	HpImPy- β -Py- γ -Hp- β -ImPyPy
	1027 β) 5'-W T G C A G W-3'	HpIm- β -PyIm- γ -Py- β -ImPyPy

TABLE 77 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTGSNNW-3' with β substitutions.

DNA sequence		aromatic amino acid sequence
1028 β)	5'-W T G C A C W-3'	HpImPyPyPy- γ -Im- β -ImPyP
5 1028 β p)	5'-W T G C A C W-3'	HpImPy- β -Py- γ -Im- β -ImPyPy
1029 β)	5'-W T G C G T W-3'	HpIm- β -ImHp- γ -Py- β -ImPyPy
1030 β)	5'-W T G C G A W-3'	HpIm- β -ImPy- γ -Hp- β -ImPyPy
1031 β)	5'-W T G C C T W-3'	HpImPyPyHp- γ -PyImIm- β -Py
1031 β p)	5'-W T G C C T W-3'	HpImPy- β -Hp- γ -PyImIm- β -Py
10 1032 β)	5'-W T G C C A W-3'	HpImPyPyPy- γ -HpImIm- β -Py
1032 β p)	5'-W T G C C A W-3'	HpImPy- β -Py- γ -HpImIm- β -Py
1035 β)	5'-W T G G C G W-3'	HpImIm- β -Im- γ -PyImPyPyPy
1036 β)	5'-W T G G C C W-3'	HpImIm- β -Py- γ -ImImPyPyPy
1037 β)	5'-W T G C G G W-3'	HpIm- β -ImIm- γ -Py- β -ImPyPy
1038 β)	5'-W T G C G C W-3'	HpIm- β -ImPy- γ -Im- β -ImPyPy
1039 β)	5'-W T G C C G W-3'	HpIm- β -PyIm- γ -PyImIm- β -Py
1040 β)	5'-W T G C C C W-3'	HpImPyPyPy- γ -ImImIm- β -Py

TABLE 78: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTTWNNW-3' with β substitutions.

	DNA sequence	aromatic amino acid sequence
	1043 β) 5'-W T T T T G W-3'	HpHp- β -HpIm- γ -PyPyPyPyPy
5	1043 β p) 5'-W T T T T G W-3'	HpHp- β -HpIm- γ -PyPy- β -PyPy
	1047 β) 5'-W T T T A G W-3'	HpHp- β -PyIm- γ -PyHpPyPyPy
	1047 β p) 5'-W T T T A G W-3'	HpHp- β -PyIm- γ -PyHp- β -PyPy
	1049 β) 5'-W T T T G T W-3'	HpHp- β -ImHp- γ -PyPyPyPyPy
	1049 β p) 5'-W T T T G T W-3'	HpHp- β -ImHp- γ -PyPy- β -PyPy
10	1050 β) 5'-W T T T G A W-3'	HpHp- β -ImPy- γ -HpPyPyPyPy
	1050 β p) 5'-W T T T G A W-3'	HpHp- β -ImPy- γ -HpPy- β -PyPy
	1051 β) 5'-W T T T G G W-3'	HpHp- β -ImIm- γ -PyPyPyPyPy
	1051 β p) 5'-W T T T G G W-3'	HpHp- β -ImIm- γ -PyPy- β -PyPy
	1052 β) 5'-W T T T G C W-3'	HpHp- β -ImPy- γ -ImPyPyPyPy
	1052 β p) 5'-W T T T G C W-3'	HpHp- β -ImPy- γ -ImPy- β -PyPy
	1055 β) 5'-W T T T C G W-3'	HpHp- β -PyIm- γ -PyImPyPyPy
	1055 β p) 5'-W T T T C G W-3'	HpHp- β -PyIm- γ -PyIm- β -PyPy
	1059 β) 5'-W T T A T G W-3'	HpHp- β -HpIm- γ -PyPyHpPyPy
	1059 β p) 5'-W T T A T G W-3'	HpHp- β -HpIm- γ -PyPy- β -PyPy
	1063 β) 5'-W T T A A G W-3'	HpHp- β -PyIm- γ -PyHpHpPyPy
	1063 β p) 5'-W T T A A G W-3'	HpHp- β -PyIm- γ -PyHp- β -PyPy
	1065 β) 5'-W T T A G T W-3'	HpHp- β -ImHp- γ -PyPyHpPyPy
	1065 β p) 5'-W T T A G T W-3'	HpHp- β -ImHp- γ -PyPy- β -PyPy
	1066 β) 5'-W T T A G A W-3'	HpHp- β -ImPy- γ -HpPyHpPyPy
25	1066 β p) 5'-W T T A G A W-3'	HpHp- β -ImPy- γ -HpPy- β -PyPy
	1067 β) 5'-W T T A G G W-3'	HpHp- β -ImIm- γ -PyPyHpPyPy
	1067 β p) 5'-W T T A G G W-3'	HpHp- β -ImIm- γ -PyPy- β -PyPy
	1068 β) 5'-W T T A G C W-3'	HpHp- β -ImPy- γ -ImPyHpPyPy
	1068 β p) 5'-W T T A G C W-3'	HpHp- β -ImPy- γ -ImPy- β -PyPy
30	1071 β) 5'-W T T A C G W-3'	HpHp- β -PyIm- γ -PyImHpPyPy
	1071 β p) 5'-W T T A C G W-3'	HpHp- β -PyIm- γ -PyIm- β -PyPy

TABLE 79: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTTSNNW-3' with β substitutions

	DNA sequence	aromatic amino acid sequence
	1073 β) 5'-W T T G T T W-3'	Hp- β -ImHpHp- γ -PyPyPyPyPy
5	1073 β p) 5'-W T T G T T W-3'	Hp- β -ImHpHp- γ -PyPyPy- β -Py
	1074 β) 5'-W T T G T A W-3'	Hp- β -ImHpPy- γ -HpPyPyPyPy
	1074 β p) 5'-W T T G T A W-3'	Hp- β -ImHpPy- γ -HpPyPy- β -Py
	1075 β) 5'-W T T G T G W-3'	Hp- β -ImHpIm- γ -PyPyPyPyPy
	1075 β p) 5'-W T T G T G W-3'	Hp- β -ImHpIm- γ -PyPyPy- β -Py
10	1076 β) 5'-W T T G T C W-3'	Hp- β -ImHpPy- γ -ImPyPyPyPy
	1076 β p) 5'-W T T G T C W-3'	Hp- β -ImHpPy- γ -ImPyPy- β -Py
	1077 β) 5'-W T T G A T W-3'	Hp- β -ImPyHp- γ -PyHpPyPyPy
	1077 β p) 5'-W T T G A T W-3'	Hp- β -ImPyHp- γ -PyHpPy- β -Py
	1078 β) 5'-W T T G A A W-3'	Hp- β -ImPyPy- γ -HpHpPyPyPy
	1078 β p) 5'-W T T G A A W-3'	Hp- β -ImPyPy- γ -HpHpPy- β -Py
	1079 β) 5'-W T T G A G W-3'	Hp- β -ImPyIm- γ -PyHpPyPyPy
	1079 β p) 5'-W T T G A G W-3'	Hp- β -ImPyIm- γ -PyHpPy- β -Py
	1080 β) 5'-W T T G A C W-3'	Hp- β -ImPyPy- γ -ImHpPyPyPy
	1080 β p) 5'-W T T G A C W-3'	Hp- β -ImPyPy- γ -ImHpPy- β -Py
20	1081 β) 5'-W T T G G T W-3'	Hp- β -ImImHp- γ -PyPyPyPyPy
	1081 β p) 5'-W T T G G T W-3'	Hp- β -ImImHp- γ -PyPyPy- β -Py
	1082 β) 5'-W T T G G A W-3'	Hp- β -ImImPy- γ -HpPyPyPyPy
	1082 β p) 5'-W T T G G A W-3'	Hp- β -ImImPy- γ -HpPyPy- β -Py
	1083 β) 5'-W T T G C T W-3'	Hp- β -ImPyHp- γ -PyImPyPyPy
25	1083 β p) 5'-W T T G C T W-3'	Hp- β -ImPyHp- γ -PyImPy- β -Py
	1084 β) 5'-W T T G C A W-3'	Hp- β -ImPyPy- γ -HpImPyPyPy
	1084 β p) 5'-W T T G C A W-3'	Hp- β -ImPyPy- γ -HpImPy- β -Py
	1085 β) 5'-W T T G G G W-3'	Hp- β -ImImIm- γ -PyPyPyPyPy
	1085 β p) 5'-W T T G G G W-3'	Hp- β -ImImIm- γ -PyPyPy- β -Py
30	1086 β) 5'-W T T G G C W-3'	Hp- β -ImImPy- γ -ImPyPyPyPy
	1086 β p) 5'-W T T G G C W-3'	Hp- β -ImImPy- γ -ImPyPy- β -Py
	1087 β) 5'-W T T G C G W-3'	Hp- β -ImPyIm- γ -PyImPyPyPy
	1087 β p) 5'-W T T G C G W-3'	Hp- β -ImPyIm- γ -PyImPy- β -Py

TABLE 79 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTTNNW-3' with β substitutions

	DNA sequence	aromatic amino acid sequence
	1088 β) 5'-W T T G C C W-3'	Hp- β -ImPyPy- γ -ImImPyPyPy
5	1088 β p) 5'-W T T G C C W-3'	Hp- β -ImPyPy- γ -ImImPy- β -Py
	1089 β) 5'-W T T C T T W-3'	HpHpPyHpHp- γ -Py- β -ImPyPy
	1089 β p) 5'-W T T C T T W-3'	HpHpPy- β -Hp- γ -Py- β -ImPyPy
	1090 β) 5'-W T T C T A W-3'	HpHpPyHpPy- γ -Hp- β -ImPyPy
	1090 β p) 5'-W T T C T A W-3'	HpHpPy- β -Py- γ -Hp- β -ImPyPy
10	1091 β) 5'-W T T C T G W-3'	HpHp- β -HpIm- γ -Py- β -ImPyPy
	1092 β) 5'-W T T C T C W-3'	HpHpPyHpPy- γ -Im- β -ImPyPy
	1092 β p) 5'-W T T C T C W-3'	HpHpPy- β -Py- γ -Im- β -ImPyPy
	1093 β) 5'-W T T C A T W-3'	HpHpPyPyHp- γ -Py- β -ImPyPy
	1093 β p) 5'-W T T C A T W-3'	HpHpPy- β -Hp- γ -Py- β -ImPyPy
	1094 β) 5'-W T T C A A W-3'	HpHpPyPyPy- γ -Hp- β -ImPyPy
	1094 β p) 5'-W T T C A A W-3'	HpHpPy- β -Py- γ -Hp- β -ImPyPy
	1095 β) 5'-W T T C A G W-3'	HpHp- β -PyIm- γ -Py- β -ImPyPy
	1096 β) 5'-W T T C A C W-3'	HpHpPyPyPy- γ -Im- β -ImPyPy
	1096 β p) 5'-W T T C A C W-3'	HpHpPy- β -Py- γ -Im- β -ImPyPy
	1097 β) 5'-W T T C G T W-3'	HpHp- β -ImHp- γ -Py- β -ImPyPy
	1098 β) 5'-W T T C G A W-3'	HpHp- β -ImPy- γ -Hp- β -ImPyPy
	1099 β) 5'-W T T C C T W-3'	HpHpPyPyHp- γ -PyImIm- β -Py
	1099 β p) 5'-W T T C C T W-3'	Hp- β -PyPyHp- γ -PyImIm- β -Py
	1100 β) 5'-W T T C C A W-3'	HpHpPyPyPy- γ -HpImIm- β -Py
25	1100 β p) 5'-W T T C C A W-3'	Hp- β -PyPyPy- γ -HpImIm- β -Py
	1101 β) 5'-W T T C G G W-3'	HpHp- β -ImIm- γ -Py- β -ImPyPy
	1102 β) 5'-W T T C G C W-3'	HpHp- β -ImPy- γ -Im- β -ImPyPy
	1103 β) 5'-W T T C C G W-3'	HpHp- β -PyIm- γ -PyImIm- β -Py

TABLE 80: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTAWNNW-3' with β substitutions

	DNA sequence	aromatic amino acid sequence
	1107 β) 5'-W T A T T G W-3'	HpPy- β -HpIm- γ -PyPyPyHpPy
5	1107 β p) 5'-W T A T T G W-3'	HpPy- β -HpIm- γ -PyPy- β -HpPy
	1111 β) 5'-W T A T A G W-3'	HpPy- β -PyIm- γ -PyHpPyHpPy
	1111 β p) 5'-W T A T A G W-3'	HpPy- β -PyIm- γ -PyHp- β -HpPy
	1113 β) 5'-W T A T G T W-3'	HpPy- β -ImHp- γ -PyPyPyHpPy
	1113 β p) 5'-W T A T G T W-3'	HpPy- β -ImHp- γ -PyPy- β -HpPy
10	1114 β) 5'-W T A T G A W-3'	HpPy- β -ImPy- γ -HpPyPyHpPy
	1114 β p) 5'-W T A T G A W-3'	HpPy- β -ImPy- γ -HpPy- β -HpPy
	1115 β) 5'-W T A T G G W-3'	HpPy- β -ImIm- γ -PyPyPyHpPy
	1115 β p) 5'-W T A T G G W-3'	HpPy- β -ImIm- γ -PyPy- β -HpPy
	1116 β) 5'-W T A T G C W-3'	HpPy- β -ImPy- γ -ImPyPyHpPy
	1116 β p) 5'-W T A T G C W-3'	HpPy- β -ImPy- γ -ImPy- β -HpPy
	1119 β) 5'-W T A T C G W-3'	HpPy- β -PyIm- γ -PyImPyHpPy
	1119 β p) 5'-W T A T C G W-3'	HpPy- β -PyIm- γ -PyIm- β -HpPy
	1123 β) 5'-W T A A T G W-3'	HpPy- β -HpIm- γ -PyPyHpHpPy
	1123 β p) 5'-W T A A T G W-3'	HpPy- β -HpIm- γ -PyPy- β -HpPy
20	1127 β) 5'-W T A A A G W-3'	HpPy- β -PyIm- γ -PyHpHpHpPy
	1127 β p) 5'-W T A A A G W-3'	HpPy- β -PyIm- γ -PyHp- β -HpPy
	1129 β) 5'-W T A A G T W-3'	HpPy- β -ImHp- γ -PyPyHpHpPy
	1129 β p) 5'-W T A A G T W-3'	HpPy- β -ImHp- γ -PyPy- β -HpPy
	1130 β) 5'-W T A A G A W-3'	HpPy- β -ImPy- γ -HpPyHpHpPy
25	1130 β p) 5'-W T A A G A W-3'	HpPy- β -ImPy- γ -HpPy- β -HpPy
	1131 β) 5'-W T A A G G W-3'	HpPy- β -ImIm- γ -PyPyHpHpPy
	1131 β p) 5'-W T A A G G W-3'	HpPy- β -ImIm- γ -PyPy- β -HpPy
	1132 β) 5'-W T A A G C W-3'	HpPy- β -ImPy- γ -ImPyHpHpPy
	1132 β p) 5'-W T A A G C W-3'	HpPy- β -ImPy- γ -ImPy- β -HpPy
30	1135 β) 5'-W T A A C G W-3'	HpPy- β -PyIm- γ -PyImHpHpPy
	1135 β p) 5'-W T A A C G W-3'	HpPy- β -PyIm- γ -PyIm- β -HpPy

TABLE 81: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTASNNW-3' with β substitutions

	DNA sequence	aromatic amino acid sequence
	1137 β) 5'-W T A G T T W-3'	Hp- β -ImHpHp- γ -PyPyPyHpPy
5	1137 β p) 5'-W T A G T T W-3'	Hp- β -ImHpHp- γ -PyPyPy- β -Py
	1138 β) 5'-W T A G T A W-3'	Hp- β -ImHpPy- γ -HpPyPyHpPy
	1138 β p) 5'-W T A G T A W-3'	Hp- β -ImHpPy- γ -HpPyPy- β -Py
	1139 β) 5'-W T A G T G W-3'	Hp- β -ImHpIm- γ -PyPyPyHpPy
	1139 β p) 5'-W T A G T G W-3'	Hp- β -ImHpIm- γ -PyPyPy- β -Py
10	1140 β) 5'-W T A G T C W-3'	Hp- β -ImHpPy- γ -ImPyPyHpPy
	1140 β p) 5'-W T A G T C W-3'	Hp- β -ImHpPy- γ -ImPyPy- β -Py
	1141 β) 5'-W T A G A T W-3'	Hp- β -ImPyHp- γ -PyHpPyHpPy
	1141 β p) 5'-W T A G A T W-3'	Hp- β -ImPyHp- γ -PyHpPy- β -Py
	1142 β) 5'-W T A G A A W-3'	Hp- β -ImPyPy- γ -HpHpPyHpPy
	1142 β p) 5'-W T A G A A W-3'	Hp- β -ImPyPy- γ -HpHpPy- β -Py
	1143 β) 5'-W T A G A G W-3'	Hp- β -ImPyIm- γ -PyHpPyHpPy
	1143 β p) 5'-W T A G A G W-3'	Hp- β -ImPyIm- γ -PyHpPy- β -Py
	1144 β) 5'-W T A G A C W-3'	Hp- β -ImPyPy- γ -ImHpPyHpPy
	1144 β p) 5'-W T A G A C W-3'	Hp- β -ImPyPy- γ -ImHpPy- β -Py
20	1145 β) 5'-W T A G G T W-3'	Hp- β -ImImHp- γ -PyPyPyHpPy
	1145 β p) 5'-W T A G G T W-3'	Hp- β -ImImHp- γ -PyPyPy- β -Py
	1146 β) 5'-W T A G G A W-3'	Hp- β -ImImPy- γ -HpPyPyHpPy
	1146 β p) 5'-W T A G G A W-3'	Hp- β -ImImPy- γ -HpPyPy- β -Py
	1147 β) 5'-W T A G C T W-3'	Hp- β -ImPyHp- γ -PyImPyHpPy
25	1147 β p) 5'-W T A G C T W-3'	Hp- β -ImPyHp- γ -PyImPy- β -Py
	1148 β) 5'-W T A G C A W-3'	Hp- β -ImPyPy- γ -HpImPyHpPy
	1148 β p) 5'-W T A G C A W-3'	Hp- β -ImPyPy- γ -HpImPy- β -Py
	1149 β) 5'-W T A G G G W-3'	Hp- β -ImImIm- γ -PyPyPyHpPy
	1149 β p) 5'-W T A G G G W-3'	Hp- β -ImImIm- γ -PyPyPy- β -Py
30	1150 β) 5'-W T A G G C W-3'	Hp- β -ImImPy- γ -ImPyPyHpPy
	1150 β p) 5'-W T A G G C W-3'	Hp- β -ImImPy- γ -ImPyPy- β -Py
	1151 β) 5'-W T A G C G W-3'	Hp- β -ImPyIm- γ -PyImPyHpPy
	1151 β p) 5'-W T A G C G W-3'	Hp- β -ImPyIm- γ -PyImPy- β -Py

TABLE 81 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTASNNW-3' with β substitutions

DNA sequence		aromatic amino acid sequence
1152 β)	5'-W T A G C C W-3'	Hp- β -ImPyPy- γ -ImImPyHpPy
1152 β p)	5'-W T A G C C W-3'	Hp- β -ImPyPy- γ -ImImPy- β -Py
1153 β)	5'-W T A C T T W-3'	HpPyPyHpHp- γ -Py- β -ImHpPy
1153 β p)	5'-W T A C T T W-3'	HpPyPy- β -Hp- γ -Py- β -ImHpPy
1154 β)	5'-W T A C T A W-3'	HpPyPyHpPy- γ -Hp- β -ImHpPy
1154 β p)	5'-W T A C T A W-3'	HpPyPy- β -Py- γ -Hp- β -ImHpPy
1155 β)	5'-W T A C T G W-3'	HpPy- β -HpIm- γ -Py- β -ImHpPy
1156 β)	5'-W T A C T C W-3'	HpPyPyHpPy- γ -Im- β -ImHpPy
1156 β p)	5'-W T A C T C W-3'	HpPyPy- β -Py- γ -Im- β -ImHpPy
1157 β)	5'-W T A C A T W-3'	HpPyPyPyHp- γ -Py- β -ImHpPy
1157 β p)	5'-W T A C A T W-3'	HpPyPy- β -Hp- γ -Py- β -ImHpPy
1158 β)	5'-W T A C A A W-3'	HpPyPyPyPy- γ -Hp- β -ImHpPy
1158 β p)	5'-W T A C A A W-3'	HpPyPy- β -Py- γ -Hp- β -ImHpPy
1159 β)	5'-W T A C A G W-3'	HpPy- β -PyIm- γ -Py- β -ImHpPy
1160 β)	5'-W T A C A C W-3'	HpPyPyPyPy- γ -Im- β -ImHpPy
1160 β p)	5'-W T A C A C W-3'	HpPyPy- β -Py- γ -Im- β -ImHpPy
1161 β)	5'-W T A C G T W-3'	HpPy- β -ImHp- γ -Py- β -ImHpPy
1162 β)	5'-W T A C G A W-3'	HpPy- β -ImPy- γ -Hp- β -ImHpPy
1163 β)	5'-W T A C C T W-3'	HpPyPyPyHp- γ -PyImIm- β -Py
1163 β p)	5'-W T A C C T W-3'	Hp- β -PyPyHp- γ -PyImIm- β -Py
1164 β)	5'-W T A C C A W-3'	HpPyPyPyPy- γ -HpImIm- β -Py
1164 β p)	5'-W T A C C A W-3'	Hp- β -PyPyPy- γ -HpImIm- β -Py
1165 β)	5'-W T A C G G W-3'	HpPy- β -ImIm- γ -Py- β -ImHpPy
1166 β)	5'-W T A C G C W-3'	HpPy- β -ImPy- γ -Im- β -ImHpPy
1167 β)	5'-W T A C C G W-3'	HpPy- β -PyIm- γ -PyImIm- β -Py

TABLE 82: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTCWNNW-3' with β substitutions

DNA sequence		aromatic amino acid sequence
1170 β)	5'-W T C T T A W-3'	HpPyHpHpPy- γ -HpPy- β -ImPy
5 1170 β p)	5'-W T C T T A W-3'	HpPy- β -HpPy- γ -HpPy- β -ImPy
1171 β)	5'-W T C T T G W-3'	HpPy- β -HpIm- γ -PyPy- β -ImPy
1172 β)	5'-W T C T T C W-3'	HpPyHpHpPy- γ -ImPy- β -ImPy
1172 β p)	5'-W T C T T C W-3'	HpPy- β -HpPy- γ -ImPy- β -ImPy
1173 β)	5'-W T C T A T W-3'	HpPyHpPyHp- γ -PyHp- β -ImPy
10 1173 β p)	5'-W T C T A T W-3'	HpPy- β -PyHp- γ -PyHp- β -ImPy
1174 β)	5'-W T C T A A W-3'	HpPyHpPyPy- γ -HpHp- β -ImPy
1174 β p)	5'-W T C T A A W-3'	HpPy- β -PyPy- γ -HpHp- β -ImPy
1175 β)	5'-W T C T A G W-3'	HpPy- β -PyIm- γ -PyHp- β -ImPy
1176 β)	5'-W T C T A C W-3'	HpPyHpPyPy- γ -ImHp- β -ImPy
1176 β p)	5'-W T C T A C W-3'	HpPy- β -PyPy- γ -ImHp- β -ImPy
1177 β)	5'-W T C T G T W-3'	HpPy- β -ImHp- γ -PyPy- β -ImPy
1178 β)	5'-W T C T G A W-3'	HpPy- β -ImPy- γ -HpPy- β -ImPy
1179 β)	5'-W T C T G G W-3'	HpPy- β -ImIm- γ -PyPy- β -ImPy
1180 β)	5'-W T C T G C W-3'	HpPy- β -ImPy- γ -ImPy- β -ImPy
1181 β)	5'-W T C T C T W-3'	HpPyHpPyHp- γ -PyIm- β -ImPy
1181 β p)	5'-W T C T C T W-3'	HpPy- β -PyHp- γ -PyIm- β -ImPy
1182 β)	5'-W T C T C A W-3'	HpPyHpPyPy- γ -HpIm- β -ImPy
1182 β p)	5'-W T C T C A W-3'	HpPy- β -PyPy- γ -HpIm- β -ImPy
1183 β)	5'-W T C T C G W-3'	HpPy- β -PyIm- γ -PyIm- β -ImPy
25 1184 β)	5'-W T C T C C W-3'	HpPyHpPyPy- γ -ImIm- β -ImPy
1184 β p)	5'-W T C T C C W-3'	HpPy- β -PyPy- γ -ImIm- β -ImPy
1185 β)	5'-W T C A T T W-3'	HpPyPyHpHp- γ -PyPy- β -ImPy
1185 β p)	5'-W T C A T T W-3'	HpPy- β -HpHp- γ -PyPy- β -ImPy
1186 β)	5'-W T C A T A W-3'	HpPyPyHpPy- γ -HpPy- β -ImPy
30 1186 β p)	5'-W T C A T A W-3'	HpPy- β -HpPy- γ -HpPy- β -ImPy
1187 β)	5'-W T C A T G W-3'	HpPy- β -HpIm- γ -PyPy- β -ImPy

TABLE 82 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTCWNNW-3' with β substitutions

	DNA sequence	aromatic amino acid sequence
	1188 β) 5'-W T C A T C W-3'	HpPyPyHpPy- γ -ImPy- β -ImPy
5	1188 β p) 5'-W T C A T C W-3'	HpPy- β -HpPy- γ -ImPy- β -ImPy
	1189 β) 5'-W T C A A T W-3'	HpPyPyPyHpPy- γ -PyHp- β -ImPy
	1189 β p) 5'-W T C A A T W-3'	HpPy- β -PyHp- γ -PyHp- β -ImPy
	1190 β) 5'-W T C A A A W-3'	HpPyPyPyPyPy- γ -HpHp- β -ImPy
	1190 β p) 5'-W T C A A A W-3'	HpPy- β -PyPy- γ -HpHp- β -ImPy
10	1191 β) 5'-W T C A A G W-3'	HpPy- β -PyIm- γ -PyHp- β -ImPy
	1192 β) 5'-W T C A A C W-3'	HpPyPyPyPyPy- γ -ImHp- β -ImPy
	1192 β p) 5'-W T C A A C W-3'	HpPy- β -PyPy- γ -ImHp- β -ImPy
	1193 β) 5'-W T C A G T W-3'	HpPy- β -ImHp- γ -PyPy- β -ImPy
	1194 β) 5'-W T C A G A W-3'	HpPy- β -ImPy- γ -HpPy- β -ImPy
	1195 β) 5'-W T C A G G W-3'	HpPy- β -ImIm- γ -PyPy- β -ImPy
	1196 β) 5'-W T C A G C W-3'	HpPy- β -ImPy- γ -ImPy- β -ImPy
	1197 β) 5'-W T C A C T W-3'	HpPyPyPyHpPy- γ -PyIm- β -ImPy
	1197 β p) 5'-W T C A C T W-3'	HpPy- β -PyHp- γ -PyIm- β -ImPy
	1198 β) 5'-W T C A C A W-3'	HpPyPyPyPyPy- γ -HpIm- β -ImPy
20	1198 β p) 5'-W T C A C A W-3'	HpPy- β -PyPy- γ -HpIm- β -ImPy
	1199 β) 5'-W T C A C G W-3'	HpPy- β -PyIm- γ -PyIm- β -ImPy
	1200 β) 5'-W T C A C C W-3'	HpPyPyPyPyPy- γ -ImIm- β -ImPy
	1200 β p) 5'-W T C A C C W-3'	HpPy- β -PyPy- γ -ImIm- β -ImPy

TABLE 83: 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTCSNNW-3' with β substitutions

	DNA sequence	aromatic amino acid sequence
	1201 β) 5'-W T C G T T W-3'	Hp- β -ImHpHp- γ -PyPy- β -ImPy
5	1202 β) 5'-W T C G T A W-3'	Hp- β -ImHpPy- γ -HpPy- β -ImPy
	1203 β) 5'-W T C G T G W-3'	Hp- β -ImHpIm- γ -PyPy- β -ImPy
	1204 β) 5'-W T C G T C W-3'	Hp- β -ImHpPy- γ -ImPy- β -ImPy
	1205 β) 5'-W T C G A T W-3'	Hp- β -ImPyHp- γ -PyHp- β -ImPy
	1206 β) 5'-W T C G A A W-3'	Hp- β -ImPyPy- γ -HpHp- β -ImPy
10	1207 β) 5'-W T C G A G W-3'	Hp- β -ImPyIm- γ -PyHp- β -ImPy
	1208 β) 5'-W T C G A C W-3'	Hp- β -ImPyPy- γ -ImHp- β -ImPy
	1209 β) 5'-W T C G G T W-3'	Hp- β -ImImHp- γ -PyPy- β -ImPy
	1210 β) 5'-W T C G G A W-3'	Hp- β -ImImPy- γ -HpPy- β -ImPy
	1211 β) 5'-W T C G C T W-3'	Hp- β -ImPyHp- γ -PyIm- β -ImPy
	1212 β) 5'-W T C G C A W-3'	Hp- β -ImPyPy- γ -HpIm- β -ImPy
	1213 β) 5'-W T C C T T W-3'	HpPyPyHpHp- γ -Py- β -ImImPy
	1213 β p) 5'-W T C C T T W-3'	HpPyPy- β -Hp- γ -Py- β -ImImPy
	1214 β) 5'-W T C C T A W-3'	HpPyPyHpPy- γ -Hp- β -ImImPy
	1214 β p) 5'-W T C C T A W-3'	HpPyPy- β -Py- γ -Hp- β -ImImPy
20	1215 β) 5'-W T C C T G W-3'	HpPy- β -HpIm- γ -Py- β -ImImPy
	1216 β) 5'-W T C C T C W-3'	HpPyPyHpPy- γ -Im- β -ImImPy
	1216 β p) 5'-W T C C T C W-3'	HpPyPy- β -Py- γ -Im- β -ImImPy
	1217 β) 5'-W T C C A T W-3'	HpPyPyPyHp- γ -Py- β -ImImPy
	1217 β p) 5'-W T C C A T W-3'	HpPyPy- β -Hp- γ -Py- β -ImImPy
25	1218 β) 5'-W T C C A A W-3'	HpPyPyPyPy- γ -Hp- β -ImImPy
	1218 β p) 5'-W T C C A A W-3'	HpPyP- β -Py- γ -Hp- β -ImImPy
	1219 β) 5'-W T C C A G W-3'	HpPy- β -PyIm- γ -Py- β -ImImPy
	1220 β) 5'-W T C C A C W-3'	HpPyPyPyPy- γ -Im- β -ImImPy
	1220 β p) 5'-W T C C A C W-3'	HpPyPy- β -Py- γ -Im- β -ImImPy
30	1221 β) 5'-W T C C G T W-3'	HpPy- β -ImHp- γ -Py- β -ImImPy
	1222 β) 5'-W T C C G A W-3'	HpPy- β -ImPy- γ -Hp- β -ImImPy
	1225 β) 5'-W T C G G G W-3'	Hp- β -ImImIm- γ -PyPy- β -ImPy

TABLE 83 (cont): 10-ring Hairpin Polyamides for recognition of 7-bp 5'-WTCSNNW-3' with β substitutions

DNA sequence	aromatic amino acid sequence
1226 β) 5'-W T C G G C W-3'	Hp- β -ImImPy- γ -ImPy- β -ImPy
1227 β) 5'-W T C G C G W-3'	Hp- β -ImPyIm- γ -PyIm- β -ImPy
1228 β) 5'-W T C G C C W-3'	Hp- β -ImPyPy- γ -ImIm- β -ImPy
1229 β) 5'-W T C C G G W-3'	HpPy- β -ImIm- γ -Py- β -ImImPy
1230 β) 5'-W T C C G C W-3'	HpPy- β -ImPy- γ -Im- β -ImImPy
1231 β) 5'-W T C C C G W-3'	HpPy- β -PyIm- γ -PyImImImPy

If the process described above of designing a preferred polyamide molecule comprising four or five carboxamide binding pairs does not produce a selective polyamide that binds to the target identified DNA sequence with subnanomolar affinity and with a selectivity over mismatch sequences of greater than a factor of ten, a polyamide molecule

X₁X₂X₃X₄X₅X₆- γ -X₇X₈X₉X₁₀X₁₁X₁₂ having six carboxamide binding pairs can be designed that is selective for an eight base pair identified target 5'-WNNNNNNW-3' sequence. The design and synthesis of six binding pair polyamides is essentially the same as that of the four and five binding pair polyamides described above.

The polyamide design process for six carboxamide binding pair polyamides is shown schematically in Figure 10 A and the upper half of 10B. The method for choosing the residues that can be replaced by a β -alanine residue is shown schematically in the lower half of Figure 10 B and in Figure 11. The 1024 possible 12-ring hairpins which target the 1024 5'-GNNNNN-3' core sequences are listed in Tables 84-115. Each DNA sequence entry can be correlated to its corresponding polyamide recognition sequence using the process outlined in this figure. The 1024 possible 12-ring hairpins which target the 1024 5'-CNNNNN-3' core sequences are listed in Tables 116-147. Each DNA sequence entry can be correlated to its corresponding polyamide recognition sequence using the process outlined in this figure.

Figure 11 shows a process for replacement of aromatic amino acid residues with aliphatic β -alanine 'spring' residues in order to enhance the DNA binding properties of 12-ring hairpin polyamides. Selective placement of an aliphatic β -alanine (β) residue paired side-by-side with either a pyrrole (Py) or imidazole (Im) aromatic amino acid or another β -alanine residue is found

to compensate for sequence composition effects for recognition of the minor groove of DNA by hairpin pyrrole-imidazole polyamides. If an all-ring polyamide has been found to have an affinity which is not subnanomolar, or a specificity versus mismatch sequences which is less than 10-fold it may be caused by DNA sequence-composition effects which can be tuned out by replacement of an aromatic amino acid with an aliphatic β -alanine spring. Rules have been determined to help determine the exact placement of the β -spring residues. For example, within the 12-ring template, it is only beneficial to place β -alanine within positions X₂, X₃, X₄, X₅, X₈, X₉, and X₁₀ X₁₁. No more than two β -alanine residues may be placed within a single hairpin structure. No more than a single β -residue may be placed within each individual polyamide subunit. Tables 148-1079 list derivatives of sequences (1233-2224) labeled (1223 β -2224 β) which contain two β -alanine residues assigned according to the process outlined in Figure 11A & B.

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TABLE 84: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGGGWNNW-3'

	DNA sequence	aromatic amino acid sequence
	1233) 5'-W G G G T T T W-3'	ImImImHpHpHp-γ-PyPyPyPyPyPy
5	1234) 5'-W G G G T T A W-3'	ImImImHpHpPy-γ-HpPyPyPyPyPy
	1235) 5'-W G G G T T G W-3'	ImImImHpHpIm-γ-PyPyPyPyPyPy
	1236) 5'-W G G G T T C W-3'	ImImImHpHpPy-γ-ImPyPyPyPyPy
	1237) 5'-W G G G T A T W-3'	ImImImHpPyHp-γ-PyHpPyPyPyPy
	1238) 5'-W G G G T A A W-3'	ImImImHpPyPy-γ-HpHpPyPyPyPy
10	1239) 5'-W G G G T A G W-3'	ImImImHpPyIm-γ-PyHpPyPyPyPy
	1240) 5'-W G G G T A C W-3'	ImImImHpPyPy-γ-ImHpPyPyPyPy
	1241) 5'-W G G G T G T W-3'	ImImImHpImHp-γ-PyPyPyPyPyPy
	1242) 5'-W G G G T G A W-3'	ImImImHpImPy-γ-HpPyPyPyPyPy
	1243) 5'-W G G G T G G W-3'	ImImImHpImIm-γ-PyPyPyPyPyPy
	1244) 5'-W G G G T G C W-3'	ImImImHpImPy-γ-ImPyPyPyPyPy
	1245) 5'-W G G G T C T W-3'	ImImImHpPyHp-γ-PyImPyPyPyPy
	1246) 5'-W G G G T C A W-3'	ImImImHpPyPy-γ-HpImPyPyPyPy
	1247) 5'-W G G G T C G W-3'	ImImImHpPyIm-γ-PyImPyPyPyPy
	1248) 5'-W G G G T C C W-3'	ImImImHpPyPy-γ-ImImPyPyPyPy
	1249) 5'-W G G G A T T W-3'	ImImImPyHpHp-γ-PyPyHpPyPyPy
	1250) 5'-W G G G A T A W-3'	ImImImPyHpPy-γ-HpPyHpPyPyPy
	1251) 5'-W G G G A T G W-3'	ImImImPyHpIm-γ-PyPyHpPyPyPy
	1252) 5'-W G G G A T C W-3'	ImImImPyHpPy-γ-ImPyHpPyPyPy
	1253) 5'-W G G G A A T W-3'	ImImImPyPyHp-γ-PyHpHpPyPyPy
25	1254) 5'-W G G G A A A W-3'	ImImImPyPyPy-γ-HpHpHpPyPyPy
	1255) 5'-W G G G A A G W-3'	ImImImPyPyIm-γ-PyHpHpPyPyPy
	1256) 5'-W G G G A A C W-3'	ImImImPyPyPy-γ-ImHpHpPyPyPy
	1257) 5'-W G G G A G T W-3'	ImImImPyImHp-γ-PyPyHpPyPyPy
	1258) 5'-W G G G A G A W-3'	ImImImPyImPy-γ-HpPyHpPyPyPy
30	1259) 5'-W G G G A G G W-3'	ImImImPyImIm-γ-PyPyHpPyPyPy
	1260) 5'-W G G G A G C W-3'	ImImImPyImPy-γ-ImPyHpPyPyPy
	1261) 5'-W G G G A C T W-3'	ImImImPyPyHp-γ-PyImHpPyPyPy
	1262) 5'-W G G G A C A W-3'	ImImImPyPyPy-γ-HpImHpPyPyPy
	1263) 5'-W G G G A C G W-3'	ImImImPyPyIm-γ-PyImHpPyPyPy
35	1264) 5'-W G G G A C C W-3'	ImImImPyPyPy-γ-ImImHpPyPyPy

TABLE 85: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGGGSNNW-3'

DNA sequence		aromatic amino acid sequence
1265)	5'-W G G G G T T W-3'	ImImImImHpHp-γ-PyPyPyPyPyPy
1266)	5'-W G G G G T A W-3'	ImImImImHpPy-γ-HpPyPyPyPyPy
1267)	5'-W G G G G T G W-3'	ImImImImHpIm-γ-PyPyPyPyPyPy
1268)	5'-W G G G G T C W-3'	ImImImImHpPy-γ-ImPyPyPyPyPy
1269)	5'-W G G G G A T W-3'	ImImImImPyHp-γ-PyHpPyPyPyPy
1270)	5'-W G G G G A A W-3'	ImImImImPyPy-γ-HpHpPyPyPyPy
1271)	5'-W G G G G A G W-3'	ImImImImPyIm-γ-PyHpPyPyPyPy
1272)	5'-W G G G G A C W-3'	ImImImImPyPy-γ-ImHpPyPyPyPy
1273)	5'-W G G G G G T W-3'	ImImImImImHp-γ-PyPyPyPyPyPy
1274)	5'-W G G G G G A W-3'	ImImImImImPy-γ-HpPyPyPyPyPy
1275)	5'-W G G G G C T W-3'	ImImImImPyHp-γ-PyImPyPyPyPy
1276)	5'-W G G G G C A W-3'	ImImImImPyPy-γ-HpImPyPyPyPy
1277)	5'-W G G G C T T W-3'	ImImImPyHpHp-γ-PyPyImPyPyPy
1278)	5'-W G G G C T A W-3'	ImImImPyHpPy-γ-HpPyImPyPyPy
1279)	5'-W G G G C T G W-3'	ImImImPyHpIm-γ-PyPyImPyPyPy
1280)	5'-W G G G C T C W-3'	ImImImPyHpPy-γ-ImPyImPyPyPy
1281)	5'-W G G G C A T W-3'	ImImImPyPyHp-γ-PyHpImPyPyPy
1282)	5'-W G G G C A A W-3'	ImImImPyPyPy-γ-HpHpImPyPyPy
1283)	5'-W G G G C A G W-3'	ImImImPyPyIm-γ-PyHpImPyPyPy
1284)	5'-W G G G C A C W-3'	ImImImPyPyPy-γ-ImHpImPyPyPy
1285)	5'-W G G G C G T W-3'	ImImImPyImHp-γ-PyPyImPyPyPy
1286)	5'-W G G G C G A W-3'	ImImImPyImPy-γ-HpPyImPyPyPy
1287)	5'-W G G G C C T W-3'	ImImImPyPyHp-γ-PyImImPyPyPy
1288)	5'-W G G G C C A W-3'	ImImImPyPyPy-γ-HpImImPyPyPy
G49)	5'-W G G G G G G W-3'	ImImImImImIm-γ-PyPyPyPyPyPy
G50)	5'-W G G G G G C W-3'	ImImImImImPy-γ-ImPyPyPyPyPy
G51)	5'-W G G G G C G W-3'	ImImImImPyIm-γ-PyImPyPyPyPy
G52)	5'-W G G G G C C W-3'	ImImImImPyPy-γ-ImImPyPyPyPy
G53)	5'-W G G G C G G W-3'	ImImImPyImIm-γ-PyPyImPyPyPy
G54)	5'-W G G G C G C W-3'	ImImImPyImPy-γ-ImPyImPyPyPy
G55)	5'-W G G G C C G W-3'	ImImImPyPyIm-γ-PyImImPyPyPy
G56)	5'-W G G G C C C W-3'	ImImImPyPyPy-γ-ImImImPyPyPy

TABLE 86: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGGTWNNW-3'

DNA sequence		aromatic amino acid sequence
1289)	5'-W G G T T T W-3'	ImImHpHpHpHp-γ-PyPyPyPyPyPy
1290)	5'-W G G T T T A W-3'	ImImHpHpHpPy-γ-HpPyPyPyPyPy
1291)	5'-W G G T T T G W-3'	ImImHpHpHpIm-γ-PyPyPyPyPyPy
1292)	5'-W G G T T T C W-3'	ImImHpHpHpPy-γ-ImPyPyPyPyPy
1293)	5'-W G G T T A T W-3'	ImImHpHpPyHp-γ-PyHpPyPyPyPy
1294)	5'-W G G T T A A W-3'	ImImHpHpPyPy-γ-HpHpPyPyPyPy
1295)	5'-W G G T T A G W-3'	ImImHpHpPyIm-γ-PyHpPyPyPyPy
1296)	5'-W G G T T A C W-3'	ImImHpHpPyPy-γ-ImHpPyPyPyPy
1297)	5'-W G G T T G T W-3'	ImImHpHpImHp-γ-PyPyPyPyPyPy
1298)	5'-W G G T T G A W-3'	ImImHpHpImPy-γ-HpPyPyPyPyPy
1299)	5'-W G G T T G G W-3'	ImImHpHpImIm-γ-PyPyPyPyPyPy
1300)	5'-W G G T T G C W-3'	ImImHpHpImPy-γ-ImPyPyPyPyPy
1301)	5'-W G G T T C T W-3'	ImImHpHpPyHp-γ-PyImPyPyPyPy
1302)	5'-W G G T T C A W-3'	ImImHpHpPyPy-γ-HpImPyPyPyPy
1303)	5'-W G G T T C G W-3'	ImImHpHpPyIm-γ-PyImPyPyPyPy
1304)	5'-W G G T T C C W-3'	ImImHpHpPyPy-γ-ImImPyPyPyPy
1305)	5'-W G G T A T T W-3'	ImImHpPyHpHp-γ-PyPyHpPyPyPy
1306)	5'-W G G T A T A W-3'	ImImHpPyHpPy-γ-HpPyHpPyPyPy
1307)	5'-W G G T A T G W-3'	ImImHpPyHpIm-γ-PyPyHpPyPyPy
1308)	5'-W G G T A T C W-3'	ImImHpPyHpPy-γ-ImPyHpPyPyPy
1309)	5'-W G G T A A T W-3'	ImImHpPyPyHp-γ-PyHpHpPyPyPy
1310)	5'-W G G T A A A W-3'	ImImHpPyPyPy-γ-HpHpHpPyPyPy
1311)	5'-W G G T A A G W-3'	ImImHpPyPyIm-γ-PyHpHpPyPyPy
1312)	5'-W G G T A A C W-3'	ImImHpPyPyPy-γ-ImHpHpPyPyPy
1313)	5'-W G G T A G T W-3'	ImImHpPyImHp-γ-PyPyHpPyPyPy
1314)	5'-W G G T A G A W-3'	ImImHpPyImPy-γ-HpPyHpPyPyPy
1315)	5'-W G G T A G G W-3'	ImImHpPyImIm-γ-PyPyHpPyPyPy
1316)	5'-W G G T A G C W-3'	ImImHpPyImPy-γ-ImPyHpPyPyPy
1317)	5'-W G G T A C T W-3'	ImImHpPyPyHp-γ-PyImHpPyPyPy
1318)	5'-W G G T A C A W-3'	ImImHpPyPyPy-γ-HpImHpPyPyPy
1319)	5'-W G G T A C G W-3'	ImImHpPyPyIm-γ-PyImHpPyPyPy
1320)	5'-W G G T A C C W-3'	ImImHpPyPyPy-γ-ImImHpPyPyPy

TABLE 87: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGGTSNNW-3'

DNA sequence		aromatic amino acid sequence
1321)	5'-W G G T G T T W-3'	ImImHpImHpHp-γ-PyPyPyPyPyPy
1322)	5'-W G G T G T A W-3'	ImImHpImHpPy-γ-HpPyPyPyPyPy
1323)	5'-W G G T G T G W-3'	ImImHpImHpIm-γ-PyPyPyPyPyPy
1324)	5'-W G G T G T C W-3'	ImImHpImHpPy-γ-ImPyPyPyPyPy
1325)	5'-W G G T G A T W-3'	ImImHpImPyHp-γ-PyHpPyPyPyPy
1326)	5'-W G G T G A A W-3'	ImImHpImPyPy-γ-HpHpPyPyPyPy
1327)	5'-W G G T G A G W-3'	ImImHpImPyIm-γ-PyHpPyPyPyPy
1328)	5'-W G G T G A C W-3'	ImImHpImPyPy-γ-ImHpPyPyPyPy
1329)	5'-W G G T G G T W-3'	ImImHpImImHp-γ-PyPyPyPyPyPy
1330)	5'-W G G T G G A W-3'	ImImHpImImPy-γ-HpPyPyPyPyPy
1331)	5'-W G G T G C T W-3'	ImImHpImPyHp-γ-PyImPyPyPyPy
1332)	5'-W G G T G C A W-3'	ImImHpImPyPy-γ-HpImPyPyPyPy
1333)	5'-W G G T G G G W-3'	ImImHpImImIm-γ-PyPyPyPyPyPy
1334)	5'-W G G T G G C W-3'	ImImHpImImPy-γ-ImPyPyPyPyPy
1335)	5'-W G G T G C G W-3'	ImImHpImPyIm-γ-PyImPyPyPyPy
1336)	5'-W G G T G C C W-3'	ImImHpImPyPy-γ-ImImPyPyPyPy
1337)	5'-W G G T C T T W-3'	ImImHpPyHpHp-γ-PyPyImPyPyPy
1338)	5'-W G G T C T A W-3'	ImImHpPyHpPy-γ-HpPyImPyPyPy
1339)	5'-W G G T C T G W-3'	ImImHpPyHpIm-γ-PyPyImPyPyPy
1340)	5'-W G G T C T C W-3'	ImImHpPyHpPy-γ-ImPyImPyPyPy
1341)	5'-W G G T C A T W-3'	ImImHpPyPyHp-γ-PyHpImPyPyPy
1342)	5'-W G G T C A A W-3'	ImImHpPyPyPy-γ-HpHpImPyPyPy
1343)	5'-W G G T C A G W-3'	ImImHpPyPyIm-γ-PyHpImPyPyPy
1344)	5'-W G G T C A C W-3'	ImImHpPyPyPy-γ-ImHpImPyPyPy
1345)	5'-W G G T C G T W-3'	ImImHpPyImHp-γ-PyPyImPyPyPy
1346)	5'-W G G T C G A W-3'	ImImHpPyImPy-γ-HpPyImPyPyPy
1347)	5'-W G G T C C T W-3'	ImImHpPyPyHp-γ-PyImImPyPyPy
1348)	5'-W G G T C C A W-3'	ImImHpPyPyPy-γ-HpImImPyPyPy
1349)	5'-W G G T C G G W-3'	ImImHpPyImIm-γ-PyPyImPyPyPy
1350)	5'-W G G T C G C W-3'	ImImHpPyImPy-γ-ImPyImPyPyPy
1351)	5'-W G G T C C G W-3'	ImImHpPyPyIm-γ-PyImImPyPyPy
1352)	5'-W G G T C C C W-3'	ImImHpPyPyPy-γ-ImImImPyPyPy

TABLE 88: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGGAWNNW-3'

DNA sequence		aromatic amino acid sequence
1353)	5'-W G G A T T T W-3'	ImImPyHpHpHp-γ-PyPyPyHpPyPy
1354)	5'-W G G A T T A W-3'	ImImPyHpHpPy-γ-HpPyPyHpPyPy
1355)	5'-W G G A T T G W-3'	ImImPyHpHpIm-γ-PyPyPyHpPyPy
1356)	5'-W G G A T T C W-3'	ImImPyHpHpPy-γ-ImPyPyHpPyPy
1357)	5'-W G G A T A T W-3'	ImImPyHpPyHp-γ-PyHpPyHpPyPy
1358)	5'-W G G A T A A W-3'	ImImPyHpPyPy-γ-HpHpPyHpPyPy
1359)	5'-W G G A T A G W-3'	ImImPyHpPyIm-γ-PyHpPyHpPyPy
1360)	5'-W G G A T A C W-3'	ImImPyHpPyPy-γ-ImHpPyHpPyPy
1361)	5'-W G G A T G T W-3'	ImImPyHpImHp-γ-PyPyPyHpPyPy
1362)	5'-W G G A T G A W-3'	ImImPyHpImPy-γ-HpPyPyHpPyPy
1363)	5'-W G G A T G G W-3'	ImImPyHpImIm-γ-PyPyPyHpPyPy
1364)	5'-W G G A T G C W-3'	ImImPyHpImPy-γ-ImPyPyHpPyPy
1365)	5'-W G G A T C T W-3'	ImImPyHpPyHp-γ-PyImPyHpPyPy
1366)	5'-W G G A T C A W-3'	ImImPyHpPyPy-γ-HpImPyHpPyPy
1367)	5'-W G G A T C G W-3'	ImImPyHpPyIm-γ-PyImPyHpPyPy
1368)	5'-W G G A T C C W-3'	ImImPyHpPyPy-γ-ImImPyHpPyPy
1369)	5'-W G G A A T T W-3'	ImImPyPyHpHp-γ-PyPyHpHpPyPy
1370)	5'-W G G A A T A W-3'	ImImPyPyHpPy-γ-HpPyHpHpPyPy
1371)	5'-W G G A A T G W-3'	ImImPyPyHpIm-γ-PyPyHpHpPyPy
1372)	5'-W G G A A T C W-3'	ImImPyPyHpPy-γ-ImPyHpHpPyPy
1373)	5'-W G G A A A T W-3'	ImImPyPyPyHp-γ-PyHpHpHpPyPy
1374)	5'-W G G A A A A W-3'	ImImPyPyPyPy-γ-HpHpHpHpPyPy
1375)	5'-W G G A A A G W-3'	ImImPyPyPyIm-γ-PyHpHpHpPyPy
1376)	5'-W G G A A A C W-3'	ImImPyPyPyPy-γ-ImHpHpHpPyPy
1377)	5'-W G G A A G T W-3'	ImImPyPyImHp-γ-PyPyHpHpPyPy
1378)	5'-W G G A A G A W-3'	ImImPyPyImPy-γ-HpPyHpHpPyPy
1379)	5'-W G G A A G G W-3'	ImImPyPyImIm-γ-PyPyHpHpPyPy
1380)	5'-W G G A A G C W-3'	ImImPyPyImPy-γ-ImPyHpHpPyPy
1381)	5'-W G G A A C T W-3'	ImImPyPyPyHp-γ-PyImHpHpPyPy
1382)	5'-W G G A A C A W-3'	ImImPyPyPyPy-γ-HpImHpHpPyPy
1383)	5'-W G G A A C G W-3'	ImImPyPyPyIm-γ-PyImHpHpPyPy
1384)	5'-W G G A A C C W-3'	ImImPyPyPyPy-γ-ImImHpHpPyPy

TABLE 89: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGGASNNW-3'

	DNA sequence	aromatic amino acid sequence
	1385) 5'-W G G A G T T W-3'	ImImPyImHpHp-γ-PyPyPyHpPyPy
5	1386) 5'-W G G A G T A W-3'	ImImPyImHpPy-γ-HpPyPyHpPyPy
	1387) 5'-W G G A G T G W-3'	ImImPyImHpIm-γ-PyPyPyHpPyPy
	1388) 5'-W G G A G T C W-3'	ImImPyImHpPy-γ-ImPyPyHpPyPy
	1389) 5'-W G G A G A T W-3'	ImImPyImPyHp-γ-PyHpPyHpPyPy
	1390) 5'-W G G A G A A W-3'	ImImPyImPyPy-γ-HpHpPyHpPyPy
10	1391) 5'-W G G A G A G W-3'	ImImPyImPyIm-γ-PyHpPyHpPyPy
	1392) 5'-W G G A G A C W-3'	ImImPyImPyPy-γ-ImHpPyHpPyPy
	1393) 5'-W G G A G G T W-3'	ImImPyImImHp-γ-PyPyPyHpPyPy
	1394) 5'-W G G A G G A W-3'	ImImPyImImPy-γ-HpPyPyHpPyPy
	1395) 5'-W G G A G C T W-3'	ImImPyImPyHp-γ-PyImPyHpPyPy
	1396) 5'-W G G A G C A W-3'	ImImPyImPyPy-γ-HpImPyHpPyPy
	1397) 5'-W G G A G G G W-3'	ImImPyImImIm-γ-PyPyPyHpPyPy
	1398) 5'-W G G A G G C W-3'	ImImPyImImPy-γ-ImPyPyHpPyPy
	1399) 5'-W G G A G C G W-3'	ImImPyImPyIm-γ-PyImPyHpPyPy
	1400) 5'-W G G A G C C W-3'	ImImPyImPyPy-γ-ImImPyHpPyPy
20	1401) 5'-W G G A C T T W-3'	ImImPyPyHpHp-γ-PyPyImHpPyPy
	1402) 5'-W G G A C T A W-3'	ImImPyPyHpPy-γ-HpPyImHpPyPy
	1403) 5'-W G G A C T G W-3'	ImImPyPyHpIm-γ-PyPyImHpPyPy
	1404) 5'-W G G A C T C W-3'	ImImPyPyHpPy-γ-ImPyImHpPyPy
	1405) 5'-W G G A C A T W-3'	ImImPyPyPyHp-γ-PyHpImHpPyPy
25	1406) 5'-W G G A C A A W-3'	ImImPyPyPyPy-γ-HpHpImHpPyPy
	1407) 5'-W G G A C A G W-3'	ImImPyPyPyIm-γ-PyHpImHpPyPy
	1408) 5'-W G G A C A C W-3'	ImImPyPyPyPy-γ-ImHpImHpPyPy
	1409) 5'-W G G A C G T W-3'	ImImPyPyImHp-γ-PyPyImHpPyPy
	1410) 5'-W G G A C G A W-3'	ImImPyPyImPy-γ-HpPyImHpPyPy
30	1411) 5'-W G G A C C T W-3'	ImImPyPyPyHp-γ-PyImImHpPyPy
	1412) 5'-W G G A C C A W-3'	ImImPyPyPyPy-γ-HpImImHpPyPy
	1413) 5'-W G G A C G G W-3'	ImImPyPyImIm-γ-PyPyImHpPyPy
	1414) 5'-W G G A C G C W-3'	ImImPyPyImPy-γ-ImPyImHpPyPy
	1415) 5'-W G G A C C G W-3'	ImImPyPyPyIm-γ-PyImImHpPyPy
35	1416) 5'-W G G A C C C W-3'	ImImPyPyPyPy-γ-ImImImHpPyPy

TABLE 90: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGGCWNW-3'

DNA sequence		aromatic amino acid sequence
1417)	5'-W G G C T T T W-3'	ImImPyHpHpHp-γ-PyPyPyImPyPy
1418)	5'-W G G C T T A W-3'	ImImPyHpHpPy-γ-HpPyPyImPyPy
1419)	5'-W G G C T T G W-3'	ImImPyHpHpIm-γ-PyPyPyImPyPy
1420)	5'-W G G C T T C W-3'	ImImPyHpHpPy-γ-ImPyPyImPyPy
1421)	5'-W G G C T A T W-3'	ImImPyHpPyHp-γ-PyHpPyImPyPy
1422)	5'-W G G C T A A W-3'	ImImPyHpPyPy-γ-HpHpPyImPyPy
1423)	5'-W G G C T A G W-3'	ImImPyHpPyIm-γ-PyHpPyImPyPy
1424)	5'-W G G C T A C W-3'	ImImPyHpPyPy-γ-ImHpPyImPyPy
1425)	5'-W G G C T G T W-3'	ImImPyHpImHp-γ-PyPyPyImPyPy
1426)	5'-W G G C T G A W-3'	ImImPyHpImPy-γ-HpPyPyImPyPy
1427)	5'-W G G C T G G W-3'	ImImPyHpImIm-γ-PyPyPyImPyPy
1428)	5'-W G G C T G C W-3'	ImImPyHpImPy-γ-ImPyPyImPyPy
1429)	5'-W G G C T C T W-3'	ImImPyHpPyHp-γ-PyImPyImPyPy
1430)	5'-W G G C T C A W-3'	ImImPyHpPyPy-γ-HpImPyImPyPy
1431)	5'-W G G C T C G W-3'	ImImPyHpPyIm-γ-PyImPyImPyPy
1432)	5'-W G G C T C C W-3'	ImImPyHpPyPy-γ-ImImPyImPyPy
1433)	5'-W G G C A T T W-3'	ImImPyPyHpHp-γ-PyPyHpImPyPy
1434)	5'-W G G C A T A W-3'	ImImPyPyHpPy-γ-HpPyHpImPyPy
1435)	5'-W G G C A T G W-3'	ImImPyPyHpIm-γ-PyPyHpImPyPy
1436)	5'-W G G C A T C W-3'	ImImPyPyHpPy-γ-ImPyHpImPyPy
1437)	5'-W G G C A A T W-3'	ImImPyPyPyHp-γ-PyHpHpImPyPy
1438)	5'-W G G C A A A W-3'	ImImPyPyPyPy-γ-HpHpHpImPyPy
1439)	5'-W G G C A A G W-3'	ImImPyPyPyIm-γ-PyHpHpImPyPy
1440)	5'-W G G C A A C W-3'	ImImPyPyPyPy-γ-ImHpHpImPyPy
1441)	5'-W G G C A G T W-3'	ImImPyPyImHp-γ-PyPyHpImPyPy
1442)	5'-W G G C A G A W-3'	ImImPyPyImPy-γ-HpPyHpImPyPy
1443)	5'-W G G C A G G W-3'	ImImPyPyImIm-γ-PyPyHpImPyPy
1444)	5'-W G G C A G C W-3'	ImImPyPyImPy-γ-ImPyHpImPyPy
1445)	5'-W G G C A C T W-3'	ImImPyPyPyHp-γ-PyImHpImPyPy
1446)	5'-W G G C A C A W-3'	ImImPyPyPyPy-γ-HpImHpImPyPy
1447)	5'-W G G C A C G W-3'	ImImPyPyPyIm-γ-PyImHpImPyPy
1448)	5'-W G G C A C C W-3'	ImImPyPyPyPy-γ-ImImHpImPyPy

TABLE 91: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGGCSNNW-3'

DNA sequence		aromatic amino acid sequence
1449)	5'-W G G C G T T W-3'	ImImPyImHpHp-γ-PyPyPyImPyPy
1450)	5'-W G G C G T A W-3'	ImImPyImHpPy-γ-HpPyPyImPyPy
1451)	5'-W G G C G T G W-3'	ImImPyImHpIm-γ-PyPyPyImPyPy
1452)	5'-W G G C G T C W-3'	ImImPyImHpPy-γ-ImPyPyImPyPy
1453)	5'-W G G C G A T W-3'	ImImPyImPyHp-γ-PyHpPyImPyPy
1454)	5'-W G G C G A A W-3'	ImImPyImPyPy-γ-HpHpPyImPyPy
1455)	5'-W G G C G A G W-3'	ImImPyImPyIm-γ-PyHpPyImPyPy
1456)	5'-W G G C G A C W-3'	ImImPyImPyPy-γ-ImHpPyImPyPy
1457)	5'-W G G C G G T W-3'	ImImPyImImHp-γ-PyPyPyImPyPy
1458)	5'-W G G C G G A W-3'	ImImPyImImPy-γ-HpPyPyImPyPy
1459)	5'-W G G C G C T W-3'	ImImPyImPyHp-γ-PyImPyImPyPy
1460)	5'-W G G C G C A W-3'	ImImPyImPyPy-γ-HpImPyImPyPy
1461)	5'-W G G C C T T W-3'	ImImPyPyHpHp-γ-PyPyImImPyPy
1462)	5'-W G G C C T A W-3'	ImImPyPyHpPy-γ-HpPyImImPyPy
1463)	5'-W G G C C T G W-3'	ImImPyPyHpIm-γ-PyPyImImPyPy
1464)	5'-W G G C C T C W-3'	ImImPyPyHpPy-γ-ImPyImImPyPy
1465)	5'-W G G C C A T W-3'	ImImPyPyPyHp-γ-PyHpImImPyPy
1466)	5'-W G G C C A A W-3'	ImImPyPyPyPy-γ-HpHpImImPyPy
1467)	5'-W G G C C A G W-3'	ImImPyPyPyIm-γ-PyHpImImPyPy
1468)	5'-W G G C C A C W-3'	ImImPyPyPyPy-γ-ImHpImImPyPy
1469)	5'-W G G C C G T W-3'	ImImPyPyImHp-γ-PyPyImImPyPy
1470)	5'-W G G C C G A W-3'	ImImPyPyImPy-γ-HpPyImImPyPy
1471)	5'-W G G C C C T W-3'	ImImPyPyPyHp-γ-PyImImImPyPy
1472)	5'-W G G C C C A W-3'	ImImPyPyPyPy-γ-HpImImImPyPy
G57)	5'-W G G C G G G W-3'	ImImPyImImIm-γ-PyPyPyImPyPy
G58)	5'-W G G C G G C W-3'	ImImPyImImPy-γ-ImPyPyImPyPy
G59)	5'-W G G C G C G W-3'	ImImPyImPyIm-γ-PyImPyImPyPy
G60)	5'-W G G C G C C W-3'	ImImPyImPyPy-γ-ImImPyImPyPy
G61)	5'-W G G C C G G W-3'	ImImPyPyImIm-γ-PyPyImImPyPy
G62)	5'-W G G C C G C W-3'	ImImPyPyImPy-γ-ImPyImImPyPy
G63)	5'-W G G C C C G W-3'	ImImPyPyPyIm-γ-PyImImImPyPy
G64)	5'-W G G C C C C W-3'	ImImPyPyPyPy-γ-ImImImImPyPy

TABLE 92: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGCGWNNW-3'

DNA sequence		aromatic amino acid sequence
1473)	5'-W G C G T T T W-3'	ImPyImHpHpHp-γ-PyPyPyPyImPy
1474)	5'-W G C G T T A W-3'	ImPyImHpHpPy-γ-HpPyPyPyImPy
1475)	5'-W G C G T T G W-3'	ImPyImHpHpIm-γ-PyPyPyPyImPy
1476)	5'-W G C G T T C W-3'	ImPyImHpHpPy-γ-ImPyPyPyImPy
1477)	5'-W G C G T A T W-3'	ImPyImHpPyHp-γ-PyHpPyPyImPy
1478)	5'-W G C G T A A W-3'	ImPyImHpPyPy-γ-HpHpPyPyImPy
1479)	5'-W G C G T A G W-3'	ImPyImHpPyIm-γ-PyHpPyPyImPy
1480)	5'-W G C G T A C W-3'	ImPyImHpPyPy-γ-ImHpPyPyImPy
1481)	5'-W G C G T G T W-3'	ImPyImHpImHp-γ-PyPyPyPyImPy
1482)	5'-W G C G T G A W-3'	ImPyImHpImPy-γ-HpPyPyPyImPy
1483)	5'-W G C G T G G W-3'	ImPyImHpImIm-γ-PyPyPyPyImPy
1484)	5'-W G C G T G C W-3'	ImPyImHpImPy-γ-ImPyPyPyImPy
1485)	5'-W G C G T C T W-3'	ImPyImHpPyHp-γ-PyImPyPyImPy
1486)	5'-W G C G T C A W-3'	ImPyImHpPyPy-γ-HpImPyPyImPy
1487)	5'-W G C G T C G W-3'	ImPyImHpPyIm-γ-PyImPyPyImPy
1488)	5'-W G C G T C C W-3'	ImPyImHpPyPy-γ-ImImPyPyImPy
1489)	5'-W G C G A T T W-3'	ImPyImPyHpHp-γ-PyPyHpPyImPy
1490)	5'-W G C G A T A W-3'	ImPyImPyHpPy-γ-HpPyHpPyImPy
1491)	5'-W G C G A T G W-3'	ImPyImPyHpIm-γ-PyPyHpPyImPy
1492)	5'-W G C G A T C W-3'	ImPyImPyHpPy-γ-ImPyHpPyImPy
1493)	5'-W G C G A A T W-3'	ImPyImPyPyHp-γ-PyHpHpPyImPy
1494)	5'-W G C G A A A W-3'	ImPyImPyPyPy-γ-HpHpHpPyImPy
1495)	5'-W G C G A A G W-3'	ImPyImPyPyIm-γ-PyHpHpPyImPy
1496)	5'-W G C G A A C W-3'	ImPyImPyPyPy-γ-ImHpHpPyImPy
1497)	5'-W G C G A G T W-3'	ImPyImPyImHp-γ-PyPyHpPyImPy
1498)	5'-W G C G A G A W-3'	ImPyImPyImPy-γ-HpPyHpPyImPy
1499)	5'-W G C G A G G W-3'	ImPyImPyImIm-γ-PyPyHpPyImPy
1490)	5'-W G C G A G C W-3'	ImPyImPyImPy-γ-ImPyHpPyImPy
1501)	5'-W G C G A C T W-3'	ImPyImPyPyHp-γ-PyImHpPyImPy
1502)	5'-W G C G A C A W-3'	ImPyImPyPyPy-γ-HpImHpPyImPy
1503)	5'-W G C G A C G W-3'	ImPyImPyPyIm-γ-PyImHpPyImPy
1504)	5'-W G C G A C C W-3'	ImPyImPyPyPy-γ-ImImHpPyImPy

TABLE 93: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGCGSNNW-3'

DNA sequence		aromatic amino acid sequence
1505)	5'-W G C G G T T W-3'	ImPyImImHpHp-γ-PyPyPyPyImPy
1506)	5'-W G C G G T A W-3'	ImPyImImHpPy-γ-HpPyPyPyImPy
1507)	5'-W G C G G T G W-3'	ImPyImImHpIm-γ-PyPyPyPyImPy
1508)	5'-W G C G G T C W-3'	ImPyImImHpPy-γ-ImPyPyPyImPy
1509)	5'-W G C G G A T W-3'	ImPyImImPyHp-γ-PyHpPyPyImPy
1510)	5'-W G C G G A A W-3'	ImPyImImPyPy-γ-HpHpPyPyImPy
1511)	5'-W G C G G A G W-3'	ImPyImImPyIm-γ-PyHpPyPyImPy
1512)	5'-W G C G G A C W-3'	ImPyImImPyPy-γ-ImHpPyPyImPy
1513)	5'-W G C G G G T W-3'	ImPyImImImHp-γ-PyPyPyPyImPy
1514)	5'-W G C G G G A W-3'	ImPyImImImPy-γ-HpPyPyPyImPy
1515)	5'-W G C G G C T W-3'	ImPyImImPyHp-γ-PyImPyPyImPy
1516)	5'-W G C G G C A W-3'	ImPyImImPyPy-γ-HpImPyPyImPy
1517)	5'-W G C G C T T W-3'	ImPyImPyHpHp-γ-PyPyImPyImPy
1518)	5'-W G C G C T A W-3'	ImPyImPyHpPy-γ-HpPyImPyImPy
1519)	5'-W G C G C T G W-3'	ImPyImPyHpIm-γ-PyPyImPyImPy
1520)	5'-W G C G C T C W-3'	ImPyImPyHpPy-γ-ImPyImPyImPy
1521)	5'-W G C G C A T W-3'	ImPyImPyPyHp-γ-PyHpImPyImPy
1522)	5'-W G C G C A A W-3'	ImPyImPyPyPy-γ-HpHpImPyImPy
1523)	5'-W G C G C A G W-3'	ImPyImPyPyIm-γ-PyHpImPyImPy
1524)	5'-W G C G C A C W-3'	ImPyImPyPyPy-γ-ImHpImPyImPy
1525)	5'-W G C G C G T W-3'	ImPyImPyImHp-γ-PyPyImPyImPy
1526)	5'-W G C G C G A W-3'	ImPyImPyImPy-γ-HpPyImPyImPy
1527)	5'-W G C G C C T W-3'	ImPyImPyPyHp-γ-PyImPyImPy
1528)	5'-W G C G C C A W-3'	ImPyImPyPyPy-γ-HpImPyImPy
G65)	5'-W G C G G G G W-3'	ImPyImImImIm-γ-PyPyPyPyImPy
G66)	5'-W G C G G G C W-3'	ImPyImImImPy-γ-ImPyPyPyImPy
G67)	5'-W G C G G C G W-3'	ImPyImImPyIm-γ-PyImPyPyImPy
G68)	5'-W G C G G C C W-3'	ImPyImImPyPy-γ-ImImPyPyImPy
G69)	5'-W G C G C G G W-3'	ImPyImPyImIm-γ-PyPyImPyImPy
G70)	5'-W G C G C G C W-3'	ImPyImPyImPy-γ-ImPyImPyImPy
G71)	5'-W G C G C C G W-3'	ImPyImPyPyIm-γ-PyImPyImPy
G72)	5'-W G C G C C C W-3'	ImPyImPyPyPy-γ-ImImPyImPy

TABLE 94: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGCTWNNW-3'

DNA sequence		aromatic amino acid sequence
1529)	5'-W G C T T T W-3'	ImPyHpHpHp-γ-PyPyPyPyImPy
1530)	5'-W G C T T T A W-3'	ImPyHpHpHpPy-γ-HpPyPyPyImPy
1531)	5'-W G C T T T G W-3'	ImPyHpHpHpIm-γ-PyPyPyPyImPy
1532)	5'-W G C T T T C W-3'	ImPyHpHpHpPy-γ-ImPyPyPyImPy
1533)	5'-W G C T T A T W-3'	ImPyHpHpPyHp-γ-PyHpPyPyImPy
1534)	5'-W G C T T A A W-3'	ImPyHpHpPyPy-γ-HpHpPyPyImPy
1535)	5'-W G C T T A G W-3'	ImPyHpHpPyIm-γ-PyHpPyPyImPy
1536)	5'-W G C T T A C W-3'	ImPyHpHpPyPy-γ-ImHpPyPyImPy
1537)	5'-W G C T T G T W-3'	ImPyHpHpImHp-γ-PyPyPyPyImPy
1538)	5'-W G C T T G A W-3'	ImPyHpHpImPy-γ-HpPyPyPyImPy
1539)	5'-W G C T T G G W-3'	ImPyHpHpImIm-γ-PyPyPyPyImPy
1540)	5'-W G C T T G C W-3'	ImPyHpHpImPy-γ-ImPyPyPyImPy
1541)	5'-W G C T T C T W-3'	ImPyHpHpPyHp-γ-PyImPyPyImPy
1542)	5'-W G C T T C A W-3'	ImPyHpHpPyPy-γ-HpImPyPyImPy
1543)	5'-W G C T T C G W-3'	ImPyHpHpPyIm-γ-PyImPyPyImPy
1544)	5'-W G C T T C C W-3'	ImPyHpHpPyPy-γ-ImImPyPyImPy
1545)	5'-W G C T A T T W-3'	ImPyHpPyHpHp-γ-PyPyHpPyImPy
1546)	5'-W G C T A T A W-3'	ImPyHpPyHpPy-γ-HpPyHpPyImPy
1547)	5'-W G C T A T G W-3'	ImPyHpPyHpIm-γ-PyPyHpPyImPy
1548)	5'-W G C T A T C W-3'	ImPyHpPyHpPy-γ-ImPyHpPyImPy
1549)	5'-W G C T A A T W-3'	ImPyHpPyPyHp-γ-PyHpHpPyImPy
1550)	5'-W G C T A A A W-3'	ImPyHpPyPyPy-γ-HpHpHpPyImPy
1551)	5'-W G C T A A G W-3'	ImPyHpPyPyIm-γ-PyHpHpPyImPy
1552)	5'-W G C T A A C W-3'	ImPyHpPyPyPy-γ-ImHpHpPyImPy
1553)	5'-W G C T A G T W-3'	ImPyHpPyImHp-γ-PyPyHpPyImPy
1554)	5'-W G C T A G A W-3'	ImPyHpPyImPy-γ-HpPyHpPyImPy
1555)	5'-W G C T A G G W-3'	ImPyHpPyImIm-γ-PyPyHpPyImPy
1556)	5'-W G C T A G C W-3'	ImPyHpPyImPy-γ-ImPyHpPyImPy
1557)	5'-W G C T A C T W-3'	ImPyHpPyPyHp-γ-PyImHpPyImPy
1558)	5'-W G C T A C A W-3'	ImPyHpPyPyPy-γ-HpImHpPyImPy
1559)	5'-W G C T A C G W-3'	ImPyHpPyPyIm-γ-PyImHpPyImPy
1560)	5'-W G C T A C C W-3'	ImPyHpPyPyPy-γ-ImImHpPyImPy

TABLE 95: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGCTSNW-3'

DNA sequence		aromatic amino acid sequence
5	1561) 5'-W G C T G T T W-3'	ImPyHpImHpHp-γ-PyPyPyPyImPy
	1562) 5'-W G C T G T A W-3'	ImPyHpImHpPy-γ-HpPyPyPyImPy
	1563) 5'-W G C T G T G W-3'	ImPyHpImHpIm-γ-PyPyPyPyImPy
	1564) 5'-W G C T G T C W-3'	ImPyHpImHpPy-γ-ImPyPyPyImPy
	1565) 5'-W G C T G A T W-3'	ImPyHpImPyHp-γ-PyHpPyPyImPy
	1566) 5'-W G C T G A A W-3'	ImPyHpImPyPy-γ-HpHpPyPyImPy
10	1567) 5'-W G C T G A G W-3'	ImPyHpImPyIm-γ-PyHpPyPyImPy
	1568) 5'-W G C T G A C W-3'	ImPyHpImPyPy-γ-ImHpPyPyImPy
	1569) 5'-W G C T G G T W-3'	ImPyHpImImHp-γ-PyPyPyPyImPy
	1570) 5'-W G C T G G A W-3'	ImPyHpImImPy-γ-HpPyPyPyImPy
	1571) 5'-W G C T G C T W-3'	ImPyHpImPyHp-γ-PyImPyPyImPy
	1572) 5'-W G C T G C A W-3'	ImPyHpImPyPy-γ-HpImPyPyImPy
	1573) 5'-W G C T G G G W-3'	ImPyHpImImIm-γ-PyPyPyPyImPy
	1574) 5'-W G C T G G C W-3'	ImPyHpImImPy-γ-ImPyPyPyImPy
	1575) 5'-W G C T G C G W-3'	ImPyHpImPyIm-γ-PyImPyPyImPy
	1576) 5'-W G C T G C C W-3'	ImPyHpImPyPy-γ-ImImPyPyImPy
	1577) 5'-W G C T C T T W-3'	ImPyHpPyHpHp-γ-PyPyImPyImPy
	1578) 5'-W G C T C T A W-3'	ImPyHpPyHpPy-γ-HpPyImPyImPy
	1579) 5'-W G C T C T G W-3'	ImPyHpPyHpIm-γ-PyPyImPyImPy
	1580) 5'-W G C T C T C W-3'	ImPyHpPyHpPy-γ-ImPyImPyImPy
	1581) 5'-W G C T C A T W-3'	ImPyHpPyPyHp-γ-PyHpImPyImPy
25	1582) 5'-W G C T C A A W-3'	ImPyHpPyPyPy-γ-HpHpImPyImPy
	1583) 5'-W G C T C A G W-3'	ImPyHpPyPyIm-γ-PyHpImPyImPy
	1584) 5'-W G C T C A C W-3'	ImPyHpPyPyPy-γ-ImHpImPyImPy
	1585) 5'-W G C T C G T W-3'	ImPyHpPyImHp-γ-PyPyImPyImPy
	1586) 5'-W G C T C G A W-3'	ImPyHpPyImPy-γ-HpPyImPyImPy
30	1587) 5'-W G C T C C T W-3'	ImPyHpPyPyHp-γ-PyImImPyImPy
	1588) 5'-W G C T C C A W-3'	ImPyHpPyPyPy-γ-HpImImPyImPy
	1589) 5'-W G C T C G G W-3'	ImPyHpPyImIm-γ-PyPyImPyImPy
	1590) 5'-W G C T C G C W-3'	ImPyHpPyImPy-γ-ImPyImPyImPy
	1591) 5'-W G C T C C G W-3'	ImPyHpPyPyIm-γ-PyImImPyImPy
35	1592) 5'-W G C T C C C W-3'	ImPyHpPyPyPy-γ-ImImImPyImPy

TABLE 96: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGCAWNNW-3'

DNA sequence		aromatic amino acid sequence
1593)	5'-W G C A T T T W-3'	ImPyPyHpHpHp-γ-PyPyPyHpImPy
1594)	5'-W G C A T T A W-3'	ImPyPyHpHpPy-γ-HpPyPyHpImPy
1595)	5'-W G C A T T G W-3'	ImPyPyHpHpIm-γ-PyPyPyHpImPy
1596)	5'-W G C A T T C W-3'	ImPyPyHpHpPy-γ-ImPyPyHpImPy
1597)	5'-W G C A T A T W-3'	ImPyPyHpPyHp-γ-PyHpPyHpImPy
1598)	5'-W G C A T A A W-3'	ImPyPyHpPyPy-γ-HpHpPyHpImPy
1599)	5'-W G C A T A G W-3'	ImPyPyHpPyIm-γ-PyHpPyHpImPy
1600)	5'-W G C A T A C W-3'	ImPyPyHpPyPy-γ-ImHpPyHpImPy
1601)	5'-W G C A T G T W-3'	ImPyPyHpImHp-γ-PyPyPyHpImPy
1602)	5'-W G C A T G A W-3'	ImPyPyHpImPy-γ-HpPyPyHpImPy
1603)	5'-W G C A T G G W-3'	ImPyPyHpImIm-γ-PyPyPyHpImPy
1604)	5'-W G C A T G C W-3'	ImPyPyHpImPy-γ-ImPyPyHpImPy
1605)	5'-W G C A T C T W-3'	ImPyPyHpPyHp-γ-PyImPyHpImPy
1606)	5'-W G C A T C A W-3'	ImPyPyHpPyPy-γ-HpImPyHpImPy
1607)	5'-W G C A T C G W-3'	ImPyPyHpPyIm-γ-PyImPyHpImPy
1608)	5'-W G C A T C C W-3'	ImPyPyHpPyPy-γ-ImImPyHpImPy
1609)	5'-W G C A A T T W-3'	ImPyPyPyHpHp-γ-PyPyHpHpImPy
1610)	5'-W G C A A T A W-3'	ImPyPyPyHpPy-γ-HpPyHpHpImPy
1611)	5'-W G C A A T G W-3'	ImPyPyPyHpIm-γ-PyPyHpHpImPy
1612)	5'-W G C A A T C W-3'	ImPyPyPyHpPy-γ-ImPyHpHpImPy
1613)	5'-W G C A A A T W-3'	ImPyPyPyPyHp-γ-PyHpHpHpImPy
1614)	5'-W G C A A A A W-3'	ImPyPyPyPyPy-γ-HpHpHpHpImPy
1615)	5'-W G C A A A G W-3'	ImPyPyPyPyIm-γ-PyHpHpHpImPy
1616)	5'-W G C A A A C W-3'	ImPyPyPyPyPy-γ-ImHpHpHpImPy
1617)	5'-W G C A A G T W-3'	ImPyPyPyImHp-γ-PyPyHpHpImPy
1618)	5'-W G C A A G A W-3'	ImPyPyPyImPy-γ-HpPyHpHpImPy
1619)	5'-W G C A A G G W-3'	ImPyPyPyImIm-γ-PyPyHpHpImPy
1620)	5'-W G C A A G C W-3'	ImPyPyPyImPy-γ-ImPyHpHpImPy
1621)	5'-W G C A A C T W-3'	ImPyPyPyPyHp-γ-PyImHpHpImPy
1622)	5'-W G C A A C A W-3'	ImPyPyPyPyPy-γ-HpImHpHpImPy
1623)	5'-W G C A A C G W-3'	ImPyPyPyPyIm-γ-PyImHpHpImPy
1624)	5'-W G C A A C C W-3'	ImPyPyPyPyPy-γ-ImImHpHpImPy

TABLE 97: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGCASNNW-3'

DNA sequence		aromatic amino acid sequence
1625)	5'-W G C A G T T W-3'	ImPyPyImHpHp-γ-PyPyPyHpImPy
1626)	5'-W G C A G T A W-3'	ImPyPyImHpPy-γ-HpPyPyHpImPy
1627)	5'-W G C A G T G W-3'	ImPyPyImHpIm-γ-PyPyPyHpImPy
1628)	5'-W G C A G T C W-3'	ImPyPyImHpPy-γ-ImPyPyHpImPy
1629)	5'-W G C A G A T W-3'	ImPyPyImPyHp-γ-PyHpPyHpImPy
1630)	5'-W G C A G A A W-3'	ImPyPyImPyPy-γ-HpHpPyHpImPy
1631)	5'-W G C A G A G W-3'	ImPyPyImPyIm-γ-PyHpPyHpImPy
1632)	5'-W G C A G A C W-3'	ImPyPyImPyPy-γ-ImHpPyHpImPy
1633)	5'-W G C A G G T W-3'	ImPyPyImImHp-γ-PyPyPyHpImPy
1634)	5'-W G C A G G A W-3'	ImPyPyImImPy-γ-HpPyPyHpImPy
1635)	5'-W G C A G C T W-3'	ImPyPyImPyHp-γ-PyImPyHpImPy
1636)	5'-W G C A G C A W-3'	ImPyPyImPyPy-γ-HpImPyHpImPy
1637)	5'-W G C A G G G W-3'	ImPyPyImImIm-γ-PyPyPyHpImPy
1638)	5'-W G C A G G C W-3'	ImPyPyImImPy-γ-ImPyPyHpImPy
1639)	5'-W G C A G C G W-3'	ImPyPyImPyIm-γ-PyImPyHpImPy
1640)	5'-W G C A G C C W-3'	ImPyPyImPyPy-γ-ImImPyHpImPy
1641)	5'-W G C A C T T W-3'	ImPyPyPyHpHp-γ-PyPyImHpImPy
1642)	5'-W G C A C T A W-3'	ImPyPyPyHpPy-γ-HpPyImHpImPy
1643)	5'-W G C A C T G W-3'	ImPyPyPyHpIm-γ-PyPyImHpImPy
1644)	5'-W G C A C T C W-3'	ImPyPyPyHpPy-γ-ImPyImHpImPy
1645)	5'-W G C A C A T W-3'	ImPyPyPyPyHp-γ-PyHpImHpImPy
1646)	5'-W G C A C A A W-3'	ImPyPyPyPyPy-γ-HpHpImHpImPy
1647)	5'-W G C A C A G W-3'	ImPyPyPyPyIm-γ-PyHpImHpImPy
1648)	5'-W G C A C A C W-3'	ImPyPyPyPyPy-γ-ImHpImHpImPy
1649)	5'-W G C A C G T W-3'	ImPyPyPyImHp-γ-PyPyImHpImPy
1650)	5'-W G C A C G A W-3'	ImPyPyPyImPy-γ-HpPyImHpImPy
1651)	5'-W G C A C C T W-3'	ImPyPyPyPyHp-γ-PyImImHpImPy
1652)	5'-W G C A C C A W-3'	ImPyPyPyPyPy-γ-HpImImHpImPy
1653)	5'-W G C A C G G W-3'	ImPyPyPyImIm-γ-PyPyImHpImPy
1654)	5'-W G C A C G C W-3'	ImPyPyPyImPy-γ-ImPyImHpImPy
1655)	5'-W G C A C C G W-3'	ImPyPyPyPyIm-γ-PyImImHpImPy
1656)	5'-W G C A C C C W-3'	ImPyPyPyPyPy-γ-ImImImHpImPy

TABLE 98: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGCCWNNW-3'

DNA sequence		aromatic amino acid sequence
1657)	5'-W G C C T T T W-3'	ImPyPyHpHpHp- γ -PyPyPyImImPy
1658)	5'-W G C C T T A W-3'	ImPyPyHpHpPy- γ -HpPyPyImImPy
1659)	5'-W G C C T T G W-3'	ImPyPyHpHpIm- γ -PyPyPyImImPy
1660)	5'-W G C C T T C W-3'	ImPyPyHpHpPy- γ -ImPyPyImImPy
1661)	5'-W G C C T A T W-3'	ImPyPyHpPyHp- γ -PyHpPyImImPy
1662)	5'-W G C C T A A W-3'	ImPyPyHpPyPy- γ -HpHpPyImImPy
1663)	5'-W G C C T A G W-3'	ImPyPyHpPyIm- γ -PyHpPyImImPy
1664)	5'-W G C C T A C W-3'	ImPyPyHpPyPy- γ -ImHpPyImImPy
1665)	5'-W G C C T G T W-3'	ImPyPyHpImHp- γ -PyPyPyImImPy
1666)	5'-W G C C T G A W-3'	ImPyPyHpImPy- γ -HpPyPyImImPy
1667)	5'-W G C C T G G W-3'	ImPyPyHpImIm- γ -PyPyPyImImPy
1668)	5'-W G C C T G C W-3'	ImPyPyHpImPy- γ -ImPyPyImImPy
1669)	5'-W G C C T C T W-3'	ImPyPyHpPyHp- γ -PyImPyImImPy
1670)	5'-W G C C T C A W-3'	ImPyPyHpPyPy- γ -HpImPyImImPy
1671)	5'-W G C C T C G W-3'	ImPyPyHpPyIm- γ -PyImPyImImPy
1672)	5'-W G C C T C C W-3'	ImPyPyHpPyPy- γ -ImImPyImImPy
1673)	5'-W G C C A T T W-3'	ImPyPyPyHpHp- γ -PyPyHpImImPy
1674)	5'-W G C C A T A W-3'	ImPyPyPyHpPy- γ -HpPyHpImImPy
1675)	5'-W G C C A T G W-3'	ImPyPyPyHpIm- γ -PyPyHpImImPy
1676)	5'-W G C C A T C W-3'	ImPyPyPyHpPy- γ -ImPyHpImImPy
1677)	5'-W G C C A A T W-3'	ImPyPyPyPyHp- γ -PyHpHpImImPy
1678)	5'-W G C C A A A W-3'	ImPyPyPyPyPy- γ -HpHpHpImImPy
1679)	5'-W G C C A A G W-3'	ImPyPyPyPyIm- γ -PyHpHpImImPy
1680)	5'-W G C C A A C W-3'	ImPyPyPyPyPy- γ -ImHpHpImImPy
1681)	5'-W G C C A G T W-3'	ImPyPyPyImHp- γ -PyPyHpImImPy
1682)	5'-W G C C A G A W-3'	ImPyPyPyImPy- γ -HpPyHpImImPy
1683)	5'-W G C C A G G W-3'	ImPyPyPyImIm- γ -PyPyHpImImPy
1684)	5'-W G C C A G C W-3'	ImPyPyPyImPy- γ -ImPyHpImImPy
1685)	5'-W G C C A C T W-3'	ImPyPyPyPyHp- γ -PyImHpImImPy
1686)	5'-W G C C A C A W-3'	ImPyPyPyPyPy- γ -HpImHpImImPy
1687)	5'-W G C C A C G W-3'	ImPyPyPyPyIm- γ -PyImHpImImPy
1688)	5'-W G C C A C C W-3'	ImPyPyPyPyPy- γ -ImImHpImImPy

TABLE 99: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGCCSNNW-3'

DNA sequence		aromatic amino acid sequence
1689)	5'-W G C C G T T W-3'	ImPyPyImHpHp-γ-PyPyPyImImPy
1690)	5'-W G C C G T A W-3'	ImPyPyImHpPy-γ-HpPyPyImImPy
1691)	5'-W G C C G T G W-3'	ImPyPyImHpIm-γ-PyPyPyImImPy
1692)	5'-W G C C G T C W-3'	ImPyPyImHpPy-γ-ImPyPyImImPy
1693)	5'-W G C C G A T W-3'	ImPyPyImPyHp-γ-PyHpPyImImPy
1694)	5'-W G C C G A A W-3'	ImPyPyImPyPy-γ-HpHpPyImImPy
1695)	5'-W G C C G A G W-3'	ImPyPyImPyIm-γ-PyHpPyImImPy
1696)	5'-W G C C G A C W-3'	ImPyPyImPyPy-γ-ImHpPyImImPy
1697)	5'-W G C C G G T W-3'	ImPyPyImImHp-γ-PyPyPyImImPy
1698)	5'-W G C C G G A W-3'	ImPyPyImImPy-γ-HpPyPyImImPy
1699)	5'-W G C C G C T W-3'	ImPyPyImPyHp-γ-PyImPyImImPy
1700)	5'-W G C C G C A W-3'	ImPyPyImPyPy-γ-HpImPyImImPy
1701)	5'-W G C C C T T W-3'	ImPyPyPyHpHp-γ-PyPyImImImPy
1702)	5'-W G C C C T A W-3'	ImPyPyPyHpPy-γ-HpPyImImImPy
1703)	5'-W G C C C T G W-3'	ImPyPyPyHpIm-γ-PyPyImImImPy
1704)	5'-W G C C C T C W-3'	ImPyPyPyHpPy-γ-ImPyImImImPy
1705)	5'-W G C C C A T W-3'	ImPyPyPyPyHp-γ-PyHpImImImPy
1706)	5'-W G C C C A A W-3'	ImPyPyPyPyPy-γ-HpHpImImImPy
1707)	5'-W G C C C A G W-3'	ImPyPyPyPyIm-γ-PyHpImImImPy
1708)	5'-W G C C C A C W-3'	ImPyPyPyPyPy-γ-ImHpImImImPy
1709)	5'-W G C C C G T W-3'	ImPyPyPyImHp-γ-PyPyImImImPy
1710)	5'-W G C C C G A W-3'	ImPyPyPyImPy-γ-HpPyImImImPy
1711)	5'-W G C C C C T W-3'	ImPyPyPyPyHp-γ-PyImImImImPy
1712)	5'-W G C C C C A W-3'	ImPyPyPyPyPy-γ-HpImImImImPy
G73)	5'-W G C C G G G W-3'	ImPyPyImImIm-γ-PyPyPyImImPy
G74)	5'-W G C C G G C W-3'	ImPyPyImImPy-γ-ImPyPyImImPy
G75)	5'-W G C C G C G W-3'	ImPyPyImPyIm-γ-PyImPyImImPy
G76)	5'-W G C C G C C W-3'	ImPyPyImPyPy-γ-ImImPyImImPy
G77)	5'-W G C C C G G W-3'	ImPyPyPyImIm-γ-PyPyImImImPy
G78)	5'-W G C C C G C W-3'	ImPyPyPyImPy-γ-ImPyImImImPy
G79)	5'-W G C C C C G W-3'	ImPyPyPyPyIm-γ-PyImImImImPy
G80)	5'-W G C C C C C W-3'	ImPyPyPyPyPy-γ-ImImImImImPy

TABLE 100: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGAGWNNW-3'

DNA sequence		aromatic amino acid sequence
1713)	5'-W G A G T T T W-3'	ImPyImHpHpHp-γ-PyPyPyPyHpPy
1714)	5'-W G A G T T A W-3'	ImPyImHpHpPy-γ-HpPyPyPyHpPy
1715)	5'-W G A G T T G W-3'	ImPyImHpHpIm-γ-PyPyPyPyHpPy
1716)	5'-W G A G T T C W-3'	ImPyImHpHpPy-γ-ImPyPyPyHpPy
1717)	5'-W G A G T A T W-3'	ImPyImHpPyHp-γ-PyHpPyPyHpPy
1718)	5'-W G A G T A A W-3'	ImPyImHpPyPy-γ-HpHpPyPyHpPy
1719)	5'-W G A G T A G W-3'	ImPyImHpPyIm-γ-PyHpPyPyHpPy
1720)	5'-W G A G T A C W-3'	ImPyImHpPyPy-γ-ImHpPyPyHpPy
1721)	5'-W G A G T G T W-3'	ImPyImHpImHp-γ-PyPyPyPyHpPy
1722)	5'-W G A G T G A W-3'	ImPyImHpImPy-γ-HpPyPyPyHpPy
1723)	5'-W G A G T G G W-3'	ImPyImHpImIm-γ-PyPyPyPyHpPy
1724)	5'-W G A G T G C W-3'	ImPyImHpImPy-γ-ImPyPyPyHpPy
1725)	5'-W G A G T C T W-3'	ImPyImHpPyHp-γ-PyImPyPyHpPy
1726)	5'-W G A G T C A W-3'	ImPyImHpPyPy-γ-HpImPyPyHpPy
1727)	5'-W G A G T C G W-3'	ImPyImHpPyIm-γ-PyImPyPyHpPy
1728)	5'-W G A G T C C W-3'	ImPyImHpPyPy-γ-ImImPyPyHpPy
1729)	5'-W G A G A T T W-3'	ImPyImPyHpHp-γ-PyPyHpPyHpPy
1730)	5'-W G A G A T A W-3'	ImPyImPyHpPy-γ-HpPyHpPyHpPy
1731)	5'-W G A G A T G W-3'	ImPyImPyHpIm-γ-PyPyHpPyHpPy
1732)	5'-W G A G A T C W-3'	ImPyImPyHpPy-γ-ImPyHpPyHpPy
1733)	5'-W G A G A A T W-3'	ImPyImPyPyHp-γ-PyHpHpPyHpPy
1734)	5'-W G A G A A A W-3'	ImPyImPyPyPy-γ-HpHpHpPyHpPy
1735)	5'-W G A G A A G W-3'	ImPyImPyPyIm-γ-PyHpHpPyHpPy
1736)	5'-W G A G A A C W-3'	ImPyImPyPyPy-γ-ImHpHpPyHpPy
1737)	5'-W G A G A G T W-3'	ImPyImPyImHp-γ-PyPyHpPyHpPy
1738)	5'-W G A G A G A W-3'	ImPyImPyImPy-γ-HpPyHpPyHpPy
1739)	5'-W G A G A G G W-3'	ImPyImPyImIm-γ-PyPyHpPyHpPy
1740)	5'-W G A G A G C W-3'	ImPyImPyImPy-γ-ImPyHpPyHpPy
1741)	5'-W G A G A C T W-3'	ImPyImPyPyHp-γ-PyImHpPyHpPy
1742)	5'-W G A G A C A W-3'	ImPyImPyPyPy-γ-HpImHpPyHpPy
1743)	5'-W G A G A C G W-3'	ImPyImPyPyIm-γ-PyImHpPyHpPy
1744)	5'-W G A G A C C W-3'	ImPyImPyPyPy-γ-ImImHpPyHpPy

TABLE 101: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGAGSNNW-3'

DNA sequence		aromatic amino acid sequence
1745)	5'-W G A G G T T W-3'	ImPyImImHpHp-γ-PyPyPyPyHpPy
1746)	5'-W G A G G T A W-3'	ImPyImImHpPy-γ-HpPyPyPyHpPy
1747)	5'-W G A G G T G W-3'	ImPyImImHpIm-γ-PyPyPyPyHpPy
1748)	5'-W G A G G T C W-3'	ImPyImImHpPy-γ-ImPyPyPyHpPy
1749)	5'-W G A G G A T W-3'	ImPyImImPyHp-γ-PyHpPyPyHpPy
1750)	5'-W G A G G A A W-3'	ImPyImImPyPy-γ-HpHpPyPyHpPy
1751)	5'-W G A G G A G W-3'	ImPyImImPyIm-γ-PyHpPyPyHpPy
1752)	5'-W G A G G A C W-3'	ImPyImImPyPy-γ-ImHpPyPyHpPy
1753)	5'-W G A G G G T W-3'	ImPyImImImHp-γ-PyPyPyPyHpPy
1754)	5'-W G A G G G A W-3'	ImPyImImImPy-γ-HpPyPyPyHpPy
1755)	5'-W G A G G C T W-3'	ImPyImImPyHp-γ-PyImPyPyHpPy
1756)	5'-W G A G G C A W-3'	ImPyImImPyPy-γ-HpImPyPyHpPy
1757)	5'-W G A G C T T W-3'	ImPyImPyHpHp-γ-PyPyImPyHpPy
1758)	5'-W G A G C T A W-3'	ImPyImPyHpPy-γ-HpPyImPyHpPy
1759)	5'-W G A G C T G W-3'	ImPyImPyHpIm-γ-PyPyImPyHpPy
1760)	5'-W G A G C T C W-3'	ImPyImPyHpPy-γ-ImPyImPyHpPy
1761)	5'-W G A G C A T W-3'	ImPyImPyPyHp-γ-PyHpImPyHpPy
1762)	5'-W G A G C A A W-3'	ImPyImPyPyPy-γ-HpHpImPyHpPy
1763)	5'-W G A G C A G W-3'	ImPyImPyPyIm-γ-PyHpImPyHpPy
1764)	5'-W G A G C A C W-3'	ImPyImPyPyPy-γ-ImHpImPyHpPy
1765)	5'-W G A G C G T W-3'	ImPyImPyImHp-γ-PyPyImPyHpPy
1766)	5'-W G A G C G A W-3'	ImPyImPyImPy-γ-HpPyImPyHpPy
1767)	5'-W G A G C C T W-3'	ImPyImPyPyHp-γ-PyImImPyHpPy
1768)	5'-W G A G C C A W-3'	ImPyImPyPyPy-γ-HpImImPyHpPy
1769)	5'-W G A G G G G W-3'	ImPyImImImIm-γ-PyPyPyPyHpPy
1770)	5'-W G A G G G C W-3'	ImPyImImImPy-γ-ImPyPyPyHpPy
1771)	5'-W G A G G C G W-3'	ImPyImImPyIm-γ-PyImPyPyHpPy
1772)	5'-W G A G G C C W-3'	ImPyImImPyPy-γ-ImImPyPyHpPy
1773)	5'-W G A G C G G W-3'	ImPyImPyImIm-γ-PyPyImPyHpPy
1774)	5'-W G A G C G C W-3'	ImPyImPyImPy-γ-ImPyImPyHpPy
1775)	5'-W G A G C C G W-3'	ImPyImPyPyIm-γ-PyImImPyHpPy
1776)	5'-W G A G C C C W-3'	ImPyImPyPyPy-γ-ImImImPyHpPy

TABLE 102: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGATWNNW-3'

DNA sequence		aromatic amino acid sequence
1777)	5'-W G A T T T W-3'	ImPyHpHpHpHp-γ-PyPyPyPyHpPy
1778)	5'-W G A T T T A W-3'	ImPyHpHpHpPy-γ-HpPyPyPyHpPy
1779)	5'-W G A T T T G W-3'	ImPyHpHpHpIm-γ-PyPyPyPyHpPy
1780)	5'-W G A T T T C W-3'	ImPyHpHpHpPy-γ-ImPyPyPyHpPy
1781)	5'-W G A T T A T W-3'	ImPyHpHpPyHp-γ-PyHpPyPyHpPy
1782)	5'-W G A T T A A W-3'	ImPyHpHpPyPy-γ-HpHpPyPyHpPy
1783)	5'-W G A T T A G W-3'	ImPyHpHpPyIm-γ-PyHpPyPyHpPy
1784)	5'-W G A T T A C W-3'	ImPyHpHpPyPy-γ-ImHpPyPyHpPy
1785)	5'-W G A T T G T W-3'	ImPyHpHpImHp-γ-PyPyPyPyHpPy
1786)	5'-W G A T T G A W-3'	ImPyHpHpImPy-γ-HpPyPyPyHpPy
1787)	5'-W G A T T G G W-3'	ImPyHpHpImIm-γ-PyPyPyPyHpPy
1788)	5'-W G A T T G C W-3'	ImPyHpHpImPy-γ-ImPyPyPyHpPy
1789)	5'-W G A T T C T W-3'	ImPyHpHpPyHp-γ-PyImPyPyHpPy
1790)	5'-W G A T T C A W-3'	ImPyHpHpPyPy-γ-HpImPyPyHpPy
1791)	5'-W G A T T C G W-3'	ImPyHpHpPyIm-γ-PyImPyPyHpPy
1792)	5'-W G A T T C C W-3'	ImPyHpHpPyPy-γ-ImImPyPyHpPy
1793)	5'-W G A T A T T W-3'	ImPyHpPyHpHp-γ-PyPyPyPyHpPy
1794)	5'-W G A T A T A W-3'	ImPyHpPyHpPy-γ-HpPyHpPyHpPy
1795)	5'-W G A T A T G W-3'	ImPyHpPyHpIm-γ-PyPyPyPyHpPy
1796)	5'-W G A T A T C W-3'	ImPyHpPyHpPy-γ-ImPyPyPyHpPy
1797)	5'-W G A T A A T W-3'	ImPyHpPyPyHp-γ-PyHpPyPyHpPy
1798)	5'-W G A T A A A W-3'	ImPyHpPyPyPy-γ-HpHpPyPyHpPy
1799)	5'-W G A T A A G W-3'	ImPyHpPyPyIm-γ-PyHpPyPyHpPy
1800)	5'-W G A T A A C W-3'	ImPyHpPyPyPy-γ-ImHpPyPyHpPy
1801)	5'-W G A T A G T W-3'	ImPyHpPyImHp-γ-PyPyPyPyHpPy
1802)	5'-W G A T A G A W-3'	ImPyHpPyImPy-γ-HpPyPyPyHpPy
1803)	5'-W G A T A G G W-3'	ImPyHpPyImIm-γ-PyPyPyPyHpPy
1804)	5'-W G A T A G C W-3'	ImPyHpPyImPy-γ-ImPyPyPyHpPy
1805)	5'-W G A T A C T W-3'	ImPyHpPyPyHp-γ-PyImPyPyHpPy
1806)	5'-W G A T A C A W-3'	ImPyHpPyPyPy-γ-HpImPyPyHpPy
1807)	5'-W G A T A C G W-3'	ImPyHpPyPyIm-γ-PyImPyPyHpPy
1808)	5'-W G A T A C C W-3'	ImPyHpPyPyPy-γ-ImImPyPyHpPy

TABLE 103: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGATSNW-3'

DNA sequence		aromatic amino acid sequence
1809)	5'-W G A T G T T W-3'	ImPyHpImHpHp-γ-PyPyPyPyHpPy
1810)	5'-W G A T G T A W-3'	ImPyHpImHpPy-γ-HpPyPyPyHpPy
1811)	5'-W G A T G T G W-3'	ImPyHpImHpIm-γ-PyPyPyPyHpPy
1812)	5'-W G A T G T C W-3'	ImPyHpImHpPy-γ-ImPyPyPyHpPy
1813)	5'-W G A T G A T W-3'	ImPyHpImPyHp-γ-PyHpPyPyHpPy
1814)	5'-W G A T G A A W-3'	ImPyHpImPyPy-γ-HpHpPyPyHpPy
1815)	5'-W G A T G A G W-3'	ImPyHpImPyIm-γ-PyHpPyPyHpPy
1816)	5'-W G A T G A C W-3'	ImPyHpImPyPy-γ-ImHpPyPyHpPy
1817)	5'-W G A T G G T W-3'	ImPyHpImImHp-γ-PyPyPyPyHpPy
1818)	5'-W G A T G G A W-3'	ImPyHpImImPy-γ-HpPyPyPyHpPy
1819)	5'-W G A T G C T W-3'	ImPyHpImPyHp-γ-PyImPyPyHpPy
1820)	5'-W G A T G C A W-3'	ImPyHpImPyPy-γ-HpImPyPyHpPy
1821)	5'-W G A T G G G W-3'	ImPyHpImImIm-γ-PyPyPyPyHpPy
1822)	5'-W G A T G G C W-3'	ImPyHpImImPy-γ-ImPyPyPyHpPy
1823)	5'-W G A T G C G W-3'	ImPyHpImPyIm-γ-PyImPyPyHpPy
1824)	5'-W G A T G C C W-3'	ImPyHpImPyPy-γ-ImImPyPyHpPy
1825)	5'-W G A T C T T W-3'	ImPyHpPyHpHp-γ-PyPyImPyHpPy
1826)	5'-W G A T C T A W-3'	ImPyHpPyHpPy-γ-HpPyImPyHpPy
1827)	5'-W G A T C T G W-3'	ImPyHpPyHpIm-γ-PyPyImPyHpPy
1828)	5'-W G A T C T C W-3'	ImPyHpPyHpPy-γ-ImPyImPyHpPy
1829)	5'-W G A T C A T W-3'	ImPyHpPyPyHp-γ-PyHpImPyHpPy
1830)	5'-W G A T C A A W-3'	ImPyHpPyPyPy-γ-HpHpImPyHpPy
1831)	5'-W G A T C A G W-3'	ImPyHpPyPyIm-γ-PyHpImPyHpPy
1832)	5'-W G A T C A C W-3'	ImPyHpPyPyPy-γ-ImHpImPyHpPy
1833)	5'-W G A T C G T W-3'	ImPyHpPyImHp-γ-PyPyImPyHpPy
1834)	5'-W G A T C G A W-3'	ImPyHpPyImPy-γ-HpPyImPyHpPy
1835)	5'-W G A T C C T W-3'	ImPyHpPyPyHp-γ-PyImImPyHpPy
1836)	5'-W G A T C C A W-3'	ImPyHpPyPyPy-γ-HpImImPyHpPy
1837)	5'-W G A T C G G W-3'	ImPyHpPyImIm-γ-PyPyImPyHpPy
1838)	5'-W G A T C G C W-3'	ImPyHpPyImPy-γ-ImPyImPyHpPy
1839)	5'-W G A T C C G W-3'	ImPyHpPyPyIm-γ-PyImImPyHpPy
1840)	5'-W G A T C C C W-3'	ImPyHpPyPyPy-γ-ImImImPyHpPy

TABLE 104: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGAAWNNW-3'

DNA sequence		aromatic amino acid sequence
1841)	5'-W G A A T T T W-3'	ImPyPyHpHpHp-γ-PyPyPyHpHpPy
1842)	5'-W G A A T T A W-3'	ImPyPyHpHpPy-γ-HpPyPyHpHpPy
1843)	5'-W G A A T T G W-3'	ImPyPyHpHpIm-γ-PyPyPyHpHpPy
1844)	5'-W G A A T T C W-3'	ImPyPyHpHpPy-γ-ImPyPyHpHpPy
1845)	5'-W G A A T A T W-3'	ImPyPyHpPyHp-γ-PyHpPyHpHpPy
1846)	5'-W G A A T A A W-3'	ImPyPyHpPyPy-γ-HpHpPyHpHpPy
1847)	5'-W G A A T A G W-3'	ImPyPyHpPyIm-γ-PyHpPyHpHpPy
1848)	5'-W G A A T A C W-3'	ImPyPyHpPyPy-γ-ImHpPyHpHpPy
1849)	5'-W G A A T G T W-3'	ImPyPyHpImHp-γ-PyPyPyHpHpPy
1850)	5'-W G A A T G A W-3'	ImPyPyHpImPy-γ-HpPyPyHpHpPy
1851)	5'-W G A A T G G W-3'	ImPyPyHpImIm-γ-PyPyPyHpHpPy
1852)	5'-W G A A T G C W-3'	ImPyPyHpImPy-γ-ImPyPyHpHpPy
1853)	5'-W G A A T C T W-3'	ImPyPyHpPyHp-γ-PyImPyHpHpPy
1854)	5'-W G A A T C A W-3'	ImPyPyHpPyPy-γ-HpImPyHpHpPy
1855)	5'-W G A A T C G W-3'	ImPyPyHpPyIm-γ-PyImPyHpHpPy
1856)	5'-W G A A T C C W-3'	ImPyPyHpPyPy-γ-ImImPyHpHpPy
1857)	5'-W G A A A T T W-3'	ImPyPyPyHpHp-γ-PyPyHpHpHpPy
1858)	5'-W G A A A T A W-3'	ImPyPyPyHpPy-γ-HpPyHpHpHpPy
1859)	5'-W G A A A T G W-3'	ImPyPyPyHpIm-γ-PyPyHpHpHpPy
1860)	5'-W G A A A T C W-3'	ImPyPyPyHpPy-γ-ImPyHpHpHpPy
1861)	5'-W G A A A A T W-3'	ImPyPyPyPyHp-γ-PyHpHpHpHpPy
1862)	5'-W G A A A A A W-3'	ImPyPyPyPyPy-γ-HpHpHpHpHpPy
1863)	5'-W G A A A A G W-3'	ImPyPyPyPyIm-γ-PyHpHpHpHpPy
1864)	5'-W G A A A A C W-3'	ImPyPyPyPyPy-γ-ImHpHpHpHpPy
1865)	5'-W G A A A G T W-3'	ImPyPyPyImHp-γ-PyPyHpHpHpPy
1866)	5'-W G A A A G A W-3'	ImPyPyPyImPy-γ-HpPyHpHpHpPy
1867)	5'-W G A A A G G W-3'	ImPyPyPyImIm-γ-PyPyHpHpHpPy
1868)	5'-W G A A A G C W-3'	ImPyPyPyImPy-γ-ImPyHpHpHpPy
1869)	5'-W G A A A C T W-3'	ImPyPyPyPyHp-γ-PyImHpHpHpPy
1870)	5'-W G A A A C A W-3'	ImPyPyPyPyPy-γ-HpImHpHpHpPy
1871)	5'-W G A A A C G W-3'	ImPyPyPyPyIm-γ-PyImHpHpHpPy
1872)	5'-W G A A A C C W-3'	ImPyPyPyPyPy-γ-ImImHpHpHpPy

TABLE 105: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGAASNNW-3'

DNA sequence		aromatic amino acid sequence
1873)	5'-W G A A G T T W-3'	ImPyPyImHpHp- γ -PyPyPyHpHpPy
1874)	5'-W G A A G T A W-3'	ImPyPyImHpPy- γ -HpPyPyHpHpPy
1875)	5'-W G A A G T G W-3'	ImPyPyImHpIm- γ -PyPyPyHpHpPy
1876)	5'-W G A A G T C W-3'	ImPyPyImHpPy- γ -ImPyPyHpHpPy
1877)	5'-W G A A G A T W-3'	ImPyPyImPyHp- γ -PyHpPyHpHpPy
1878)	5'-W G A A G A A W-3'	ImPyPyImPyPy- γ -HpHpPyHpHpPy
1879)	5'-W G A A G A G W-3'	ImPyPyImPyIm- γ -PyHpPyHpHpPy
1880)	5'-W G A A G A C W-3'	ImPyPyImPyPy- γ -ImHpPyHpHpPy
1881)	5'-W G A A G G T W-3'	ImPyPyImImHp- γ -PyPyPyHpHpPy
1882)	5'-W G A A G G A W-3'	ImPyPyImImPy- γ -HpPyPyHpHpPy
1883)	5'-W G A A G C T W-3'	ImPyPyImPyHp- γ -PyImPyHpHpPy
1884)	5'-W G A A G C A W-3'	ImPyPyImPyPy- γ -HpImPyHpHpPy
1885)	5'-W G A A G G G W-3'	ImPyPyImImIm- γ -PyPyPyHpHpPy
1886)	5'-W G A A G G C W-3'	ImPyPyImImPy- γ -ImPyPyHpHpPy
1887)	5'-W G A A G C G W-3'	ImPyPyImPyIm- γ -PyImPyHpHpPy
1888)	5'-W G A A G C C W-3'	ImPyPyImPyPy- γ -ImImPyHpHpPy
1889)	5'-W G A A C T T W-3'	ImPyPyPyHpHp- γ -PyPyImHpHpPy
1890)	5'-W G A A C T A W-3'	ImPyPyPyHpPy- γ -HpPyImHpHpPy
1891)	5'-W G A A C T G W-3'	ImPyPyPyHpIm- γ -PyPyImHpHpPy
1892)	5'-W G A A C T C W-3'	ImPyPyPyHpPy- γ -ImPyImHpHpPy
1893)	5'-W G A A C A T W-3'	ImPyPyPyPyHp- γ -PyHpImHpHpPy
1894)	5'-W G A A C A A W-3'	ImPyPyPyPyPy- γ -HpHpImHpHpPy
1895)	5'-W G A A C A G W-3'	ImPyPyPyPyIm- γ -PyHpImHpHpPy
1896)	5'-W G A A C A C W-3'	ImPyPyPyPyPy- γ -ImHpImHpHpPy
1897)	5'-W G A A C G T W-3'	ImPyPyPyImHp- γ -PyPyImHpHpPy
1898)	5'-W G A A C G A W-3'	ImPyPyPyImPy- γ -HpPyImHpHpPy
1899)	5'-W G A A C C T W-3'	ImPyPyPyPyHp- γ -PyImImHpHpPy
1900)	5'-W G A A C C A W-3'	ImPyPyPyPyPy- γ -HpImImHpHpPy
1901)	5'-W G A A C G G W-3'	ImPyPyPyImIm- γ -PyPyImHpHpPy
1902)	5'-W G A A C G C W-3'	ImPyPyPyImPy- γ -ImPyImHpHpPy
1903)	5'-W G A A C C G W-3'	ImPyPyPyPyIm- γ -PyImImHpHpPy
1904)	5'-W G A A C C C W-3'	ImPyPyPyPyPy- γ -ImImImHpHpPy

TABLE 106: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGACWNNW-3'

DNA sequence		aromatic amino acid sequence
5	1905) 5'-W G A C T T T W-3'	ImPyPyHpHpHp-γ-PyPyPyImHpPy
	1906) 5'-W G A C T T A W-3'	ImPyPyHpHpPy-γ-HpPyPyImHpPy
	1907) 5'-W G A C T T G W-3'	ImPyPyHpHpIm-γ-PyPyPyImHpPy
	1908) 5'-W G A C T T C W-3'	ImPyPyHpHpPy-γ-ImPyPyImHpPy
	1909) 5'-W G A C T A T W-3'	ImPyPyHpPyHp-γ-PyHpPyImHpPy
10	1910) 5'-W G A C T A A W-3'	ImPyPyHpPyPy-γ-HpHpPyImHpPy
	1911) 5'-W G A C T A G W-3'	ImPyPyHpPyIm-γ-PyHpPyImHpPy
	1912) 5'-W G A C T A C W-3'	ImPyPyHpPyPy-γ-ImHpPyImHpPy
	1913) 5'-W G A C T G T W-3'	ImPyPyHpImHp-γ-PyPyPyImHpPy
	1914) 5'-W G A C T G A W-3'	ImPyPyHpImPy-γ-HpPyPyImHpPy
20	1915) 5'-W G A C T G G W-3'	ImPyPyHpImIm-γ-PyPyPyImHpPy
	1916) 5'-W G A C T G C W-3'	ImPyPyHpImPy-γ-ImPyPyImHpPy
	1917) 5'-W G A C T C T W-3'	ImPyPyHpPyHp-γ-PyImPyImHpPy
	1918) 5'-W G A C T C A W-3'	ImPyPyHpPyPy-γ-HpImPyImHpPy
	1919) 5'-W G A C T C G W-3'	ImPyPyHpPyIm-γ-PyImPyImHpPy
25	1920) 5'-W G A C T C C W-3'	ImPyPyHpPyPy-γ-ImImPyImHpPy
	1921) 5'-W G A C A T T W-3'	ImPyPyPyHpHp-γ-PyPyHpImHpPy
	1922) 5'-W G A C A T A W-3'	ImPyPyPyHpPy-γ-HpPyHpImHpPy
	1923) 5'-W G A C A T G W-3'	ImPyPyPyHpIm-γ-PyPyHpImHpPy
	1924) 5'-W G A C A T C W-3'	ImPyPyPyHpPy-γ-ImPyHpImHpPy
30	1925) 5'-W G A C A A T W-3'	ImPyPyPyPyHp-γ-PyHpHpImHpPy
	1926) 5'-W G A C A A A W-3'	ImPyPyPyPyPy-γ-HpHpHpImHpPy
	1927) 5'-W G A C A A G W-3'	ImPyPyPyPyIm-γ-PyHpHpImHpPy
	1928) 5'-W G A C A A C W-3'	ImPyPyPyPyPy-γ-ImHpHpImHpPy
	1929) 5'-W G A C A G T W-3'	ImPyPyPyImHp-γ-PyPyHpImHpPy
35	1930) 5'-W G A C A G A W-3'	ImPyPyPyImPy-γ-HpPyHpImHpPy
	1931) 5'-W G A C A G G W-3'	ImPyPyPyImIm-γ-PyPyHpImHpPy
	1932) 5'-W G A C A G C W-3'	ImPyPyPyImPy-γ-ImPyHpImHpPy
	1933) 5'-W G A C A C T W-3'	ImPyPyPyPyHp-γ-PyImHpImHpPy
	1934) 5'-W G A C A C A W-3'	ImPyPyPyPyPy-γ-HpImHpImHpPy
	1935) 5'-W G A C A C G W-3'	ImPyPyPyPyIm-γ-PyImHpImHpPy
	1936) 5'-W G A C A C C W-3'	ImPyPyPyPyPy-γ-ImImHpImHpPy

TABLE 107: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGACSNW-3'

DNA sequence		aromatic amino acid sequence
1937)	5'-W G A C G T T W-3'	ImPyPyImHpHp-γ-PyPyPyImHpPy
1938)	5'-W G A C G T A W-3'	ImPyPyImHpPy-γ-HpPyPyImHpPy
1939)	5'-W G A C G T G W-3'	ImPyPyImHpIm-γ-PyPyPyImHpPy
1940)	5'-W G A C G T C W-3'	ImPyPyImHpPy-γ-ImPyPyImHpPy
1941)	5'-W G A C G A T W-3'	ImPyPyImPyHp-γ-PyHpPyImHpPy
1942)	5'-W G A C G A A W-3'	ImPyPyImPyPy-γ-HpHpPyImHpPy
1943)	5'-W G A C G A G W-3'	ImPyPyImPyIm-γ-PyHpPyImHpPy
1944)	5'-W G A C G A C W-3'	ImPyPyImPyPy-γ-ImHpPyImHpPy
1945)	5'-W G A C G G T W-3'	ImPyPyImImHp-γ-PyPyPyImHpPy
1946)	5'-W G A C G G A W-3'	ImPyPyImImPy-γ-HpPyPyImHpPy
1947)	5'-W G A C G C T W-3'	ImPyPyImPyHp-γ-PyImPyImHpPy
1948)	5'-W G A C G C A W-3'	ImPyPyImPyPy-γ-HpImPyImHpPy
1949)	5'-W G A C C T T W-3'	ImPyPyPyHpHp-γ-PyPyImImHpPy
1950)	5'-W G A C C T A W-3'	ImPyPyPyHpPy-γ-HpPyImImHpPy
1951)	5'-W G A C C T G W-3'	ImPyPyPyHpIm-γ-PyPyImImHpPy
1952)	5'-W G A C C T C W-3'	ImPyPyPyHpPy-γ-ImPyImImHpPy
1953)	5'-W G A C C A T W-3'	ImPyPyPyPyHp-γ-PyHpImImHpPy
1954)	5'-W G A C C A A W-3'	ImPyPyPyPyPy-γ-HpHpImImHpPy
1955)	5'-W G A C C A G W-3'	ImPyPyPyPyIm-γ-PyHpImImHpPy
1956)	5'-W G A C C A C W-3'	ImPyPyPyPyPy-γ-ImHpImImHpPy
1957)	5'-W G A C C G T W-3'	ImPyPyPyImHp-γ-PyPyImImHpPy
1958)	5'-W G A C C G A W-3'	ImPyPyPyImPy-γ-HpPyImImHpPy
1959)	5'-W G A C C C T W-3'	ImPyPyPyPyHp-γ-PyImImImHpPy
1960)	5'-W G A C C C A W-3'	ImPyPyPyPyPy-γ-HpImImImHpPy
1961)	5'-W G A C G G G W-3'	ImPyPyImImIm-γ-PyPyPyImHpPy
1962)	5'-W G A C G G C W-3'	ImPyPyImImPy-γ-ImPyPyImHpPy
1963)	5'-W G A C G C G W-3'	ImPyPyImPyIm-γ-PyImPyImHpPy
1964)	5'-W G A C G C C W-3'	ImPyPyImPyPy-γ-ImImPyImHpPy
1965)	5'-W G A C C G G W-3'	ImPyPyPyImIm-γ-PyPyImImHpPy
1966)	5'-W G A C C G C W-3'	ImPyPyPyImPy-γ-ImPyImImHpPy
1967)	5'-W G A C C C G W-3'	ImPyPyPyPyIm-γ-PyImImImHpPy
1968)	5'-W G A C C C C W-3'	ImPyPyPyPyPy-γ-ImImImImHpPy

TABLE 108: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGTGWNNW-3'

DNA sequence		aromatic amino acid sequence
1969)	5'-W G T G T T T W-3'	ImHpImHpHpHp-γ-PyPyPyPyPyPy
1970)	5'-W G T G T T A W-3'	ImHpImHpHpPy-γ-HpPyPyPyPyPy
1971)	5'-W G T G T T G W-3'	ImHpImHpHpIm-γ-PyPyPyPyPyPy
1972)	5'-W G T G T T C W-3'	ImHpImHpHpPy-γ-ImPyPyPyPyPy
1973)	5'-W G T G T A T W-3'	ImHpImHpPyHp-γ-PyHpPyPyPyPy
1974)	5'-W G T G T A A W-3'	ImHpImHpPyPy-γ-HpHpPyPyPyPy
1975)	5'-W G T G T A G W-3'	ImHpImHpPyIm-γ-PyHpPyPyPyPy
1976)	5'-W G T G T A C W-3'	ImHpImHpPyPy-γ-ImHpPyPyPyPy
1977)	5'-W G T G T G T W-3'	ImHpImHpImHp-γ-PyPyPyPyPyPy
1978)	5'-W G T G T G A W-3'	ImHpImHpImPy-γ-HpPyPyPyPyPy
1979)	5'-W G T G T G G W-3'	ImHpImHpImIm-γ-PyPyPyPyPyPy
1980)	5'-W G T G T G C W-3'	ImHpImHpImPy-γ-ImPyPyPyPyPy
1981)	5'-W G T G T C T W-3'	ImHpImHpPyHp-γ-PyImPyPyPyPy
1982)	5'-W G T G T C A W-3'	ImHpImHpPyPy-γ-HpImPyPyPyPy
1983)	5'-W G T G T C G W-3'	ImHpImHpPyIm-γ-PyImPyPyPyPy
1984)	5'-W G T G T C C W-3'	ImHpImHpPyPy-γ-ImImPyPyPyPy
1985)	5'-W G T G A T T W-3'	ImHpImPyHpHp-γ-PyPyHpPyPyPy
1986)	5'-W G T G A T A W-3'	ImHpImPyHpPy-γ-HpPyHpPyPyPy
1987)	5'-W G T G A T G W-3'	ImHpImPyHpIm-γ-PyPyHpPyPyPy
1988)	5'-W G T G A T C W-3'	ImHpImPyHpPy-γ-ImPyHpPyPyPy
1989)	5'-W G T G A A T W-3'	ImHpImPyPyHp-γ-PyHpHpPyPyPy
1990)	5'-W G T G A A A W-3'	ImHpImPyPyPy-γ-HpHpHpPyPyPy
1991)	5'-W G T G A A G W-3'	ImHpImPyPyIm-γ-PyHpHpPyPyPy
1992)	5'-W G T G A A C W-3'	ImHpImPyPyPy-γ-ImHpHpPyPyPy
1993)	5'-W G T G A G T W-3'	ImHpImPyImHp-γ-PyPyHpPyPyPy
1994)	5'-W G T G A G A W-3'	ImHpImPyImPy-γ-HpPyHpPyPyPy
1995)	5'-W G T G A G G W-3'	ImHpImPyImIm-γ-PyPyHpPyPyPy
1996)	5'-W G T G A G C W-3'	ImHpImPyImPy-γ-ImPyHpPyPyPy
1997)	5'-W G T G A C T W-3'	ImHpImPyPyHp-γ-PyImHpPyPyPy
1998)	5'-W G T G A C A W-3'	ImHpImPyPyPy-γ-HpImHpPyPyPy
1999)	5'-W G T G A C G W-3'	ImHpImPyPyIm-γ-PyImHpPyPyPy
2000)	5'-W G T G A C C W-3'	ImHpImPyPyPy-γ-ImImHpPyPyPy

TABLE 109: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGTGSNNW-3'

DNA sequence		aromatic amino acid sequence
2001)	5'-W G T G G T T W-3'	ImHpImImHpHp-γ-PyPyPyPyPyPy
2002)	5'-W G T G G T A W-3'	ImHpImImHpPy-γ-HpPyPyPyPyPy
2003)	5'-W G T G G T G W-3'	ImHpImImHpIm-γ-PyPyPyPyPyPy
2004)	5'-W G T G G T C W-3'	ImHpImImHpPy-γ-ImPyPyPyPyPy
2005)	5'-W G T G G A T W-3'	ImHpImImPyHp-γ-PyHpPyPyPyPy
2006)	5'-W G T G G A A W-3'	ImHpImImPyPy-γ-HpHpPyPyPyPy
2007)	5'-W G T G G A G W-3'	ImHpImImPyIm-γ-PyHpPyPyPyPy
2008)	5'-W G T G G A C W-3'	ImHpImImPyPy-γ-ImHpPyPyPyPy
2009)	5'-W G T G G G T W-3'	ImHpImImImHp-γ-PyPyPyPyPyPy
2010)	5'-W G T G G G A W-3'	ImHpImImImPy-γ-HpPyPyPyPyPy
2011)	5'-W G T G G C T W-3'	ImHpImImPyHp-γ-PyImPyPyPyPy
2012)	5'-W G T G G C A W-3'	ImHpImImPyPy-γ-HpImPyPyPyPy
2013)	5'-W G T G C T T W-3'	ImHpImPyHpHp-γ-PyPyImPyPyPy
2014)	5'-W G T G C T A W-3'	ImHpImPyHpPy-γ-HpPyImPyPyPy
2015)	5'-W G T G C T G W-3'	ImHpImPyHpIm-γ-PyPyImPyPyPy
2016)	5'-W G T G C T C W-3'	ImHpImPyHpPy-γ-ImPyImPyPyPy
2017)	5'-W G T G C A T W-3'	ImHpImPyPyHp-γ-PyHpImPyPyPy
2018)	5'-W G T G C A A W-3'	ImHpImPyPyPy-γ-HpHpImPyPyPy
2019)	5'-W G T G C A G W-3'	ImHpImPyPyIm-γ-PyHpImPyPyPy
2020)	5'-W G T G C A C W-3'	ImHpImPyPyPy-γ-ImHpImPyPyPy
2021)	5'-W G T G C G T W-3'	ImHpImPyImHp-γ-PyPyImPyPyPy
2022)	5'-W G T G C G A W-3'	ImHpImPyImPy-γ-HpPyImPyPyPy
2023)	5'-W G T G C C T W-3'	ImHpImPyPyHp-γ-PyImImPyPyPy
2024)	5'-W G T G C C A W-3'	ImHpImPyPyPy-γ-HpImImPyPyPy
2025)	5'-W G T G G G G W-3'	ImHpImImImIm-γ-PyPyPyPyPyPy
2026)	5'-W G T G G G C W-3'	ImHpImImImPy-γ-ImPyPyPyPyPy
2027)	5'-W G T G G C G W-3'	ImHpImImPyIm-γ-PyImPyPyPyPy
2028)	5'-W G T G G C C W-3'	ImHpImImPyPy-γ-ImImPyPyPyPy
2029)	5'-W G T G C G G W-3'	ImHpImPyImIm-γ-PyPyImPyPyPy
2030)	5'-W G T G C G C W-3'	ImHpImPyImPy-γ-ImPyImPyPyPy
2031)	5'-W G T G C C G W-3'	ImHpImPyPyIm-γ-PyImImPyPyPy
2032)	5'-W G T G C C C W-3'	ImHpImPyPyPy-γ-ImImImPyPyPy

TABLE 110: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGTTWNNW-3'

	DNA sequence	aromatic amino acid sequence
	2033) 5'-W G T T T T W-3'	ImHpHpHpHpHp-γ-PyPyPyPyPyPy
5	2034) 5'-W G T T T T A W-3'	ImHpHpHpHpPy-γ-HpPyPyPyPyPy
	2035) 5'-W G T T T T G W-3'	ImHpHpHpHpIm-γ-PyPyPyPyPyPy
	2036) 5'-W G T T T T C W-3'	ImHpHpHpHpPy-γ-ImPyPyPyPyPy
	2037) 5'-W G T T T A T W-3'	ImHpHpHpPyHp-γ-PyHpPyPyPyPy
	2038) 5'-W G T T T A A W-3'	ImHpHpHpPyPy-γ-HpHpPyPyPyPy
10	2039) 5'-W G T T T A G W-3'	ImHpHpHpPyIm-γ-PyHpPyPyPyPy
	2040) 5'-W G T T T A C W-3'	ImHpHpHpPyPy-γ-ImHpPyPyPyPy
	2041) 5'-W G T T T G T W-3'	ImHpHpHpImHp-γ-PyPyPyPyPyPy
	2042) 5'-W G T T T G A W-3'	ImHpHpHpImPy-γ-HpPyPyPyPyPy
	2043) 5'-W G T T T G G W-3'	ImHpHpHpImIm-γ-PyPyPyPyPyPy
	2044) 5'-W G T T T G C W-3'	ImHpHpHpImPy-γ-ImPyPyPyPyPy
	2045) 5'-W G T T T C T W-3'	ImHpHpHpPyHp-γ-PyImPyPyPyPy
	2046) 5'-W G T T T C A W-3'	ImHpHpHpPyPy-γ-HpImPyPyPyPy
	2047) 5'-W G T T T C G W-3'	ImHpHpHpPyIm-γ-PyImPyPyPyPy
	2048) 5'-W G T T T C C W-3'	ImHpHpHpPyPy-γ-ImImPyPyPyPy
20	2049) 5'-W G T T A T T W-3'	ImHpHpPyHpHp-γ-PyPyHpPyPyPy
	2050) 5'-W G T T A T A W-3'	ImHpHpPyHpPy-γ-HpPyHpPyPyPy
	2051) 5'-W G T T A T G W-3'	ImHpHpPyHpIm-γ-PyPyHpPyPyPy
	2052) 5'-W G T T A T C W-3'	ImHpHpPyHpPy-γ-ImPyHpPyPyPy
	2053) 5'-W G T T A A T W-3'	ImHpHpPyPyHp-γ-PyHpHpPyPyPy
25	2054) 5'-W G T T A A A W-3'	ImHpHpPyPyPy-γ-HpHpHpPyPyPy
	2055) 5'-W G T T A A G W-3'	ImHpHpPyPyIm-γ-PyHpHpPyPyPy
	2056) 5'-W G T T A A C W-3'	ImHpHpPyPyPy-γ-ImHpHpPyPyPy
	2057) 5'-W G T T A G T W-3'	ImHpHpPyImHp-γ-PyPyHpPyPyPy
	2058) 5'-W G T T A G A W-3'	ImHpHpPyImPy-γ-HpPyHpPyPyPy
30	2059) 5'-W G T T A G G W-3'	ImHpHpPyImIm-γ-PyPyHpPyPyPy
	2060) 5'-W G T T A G C W-3'	ImHpHpPyImPy-γ-ImPyHpPyPyPy
	2061) 5'-W G T T A C T W-3'	ImHpHpPyPyHp-γ-PyImHpPyPyPy
	2062) 5'-W G T T A C A W-3'	ImHpHpPyPyPy-γ-HpImHpPyPyPy
	2063) 5'-W G T T A C G W-3'	ImHpHpPyPyIm-γ-PyImHpPyPyPy
35	2064) 5'-W G T T A C C W-3'	ImHpHpPyPyPy-γ-ImImHpPyPyPy

TABLE 111: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGTTNNW-3'

	DNA sequence	aromatic amino acid sequence
	2065) 5'-W G T T G T T W-3'	ImHpHpImHpHp-γ-PyPyPyPyPyPy
5	2066) 5'-W G T T G T A W-3'	ImHpHpImHpPy-γ-HpPyPyPyPyPy
	2067) 5'-W G T T G T G W-3'	ImHpHpImHpIm-γ-PyPyPyPyPyPy
	2068) 5'-W G T T G T C W-3'	ImHpHpImHpPy-γ-ImPyPyPyPyPy
	2069) 5'-W G T T G A T W-3'	ImHpHpImPyHp-γ-PyHpPyPyPyPy
	2070) 5'-W G T T G A A W-3'	ImHpHpImPyPy-γ-HpHpPyPyPyPy
10	2071) 5'-W G T T G A G W-3'	ImHpHpImPyIm-γ-PyHpPyPyPyPy
	2072) 5'-W G T T G A C W-3'	ImHpHpImPyPy-γ-ImHpPyPyPyPy
	2073) 5'-W G T T G G T W-3'	ImHpHpImImHp-γ-PyPyPyPyPyPy
	2074) 5'-W G T T G G A W-3'	ImHpHpImImPy-γ-HpPyPyPyPyPy
	2075) 5'-W G T T G C T W-3'	ImHpHpImPyHp-γ-PyImPyPyPyPy
	2076) 5'-W G T T G C A W-3'	ImHpHpImPyPy-γ-HpImPyPyPyPy
	2077) 5'-W G T T G G G W-3'	ImHpHpImImIm-γ-PyPyPyPyPyPy
	2078) 5'-W G T T G G C W-3'	ImHpHpImImPy-γ-ImPyPyPyPyPy
	2079) 5'-W G T T G C G W-3'	ImHpHpImPyIm-γ-PyImPyPyPyPy
	2080) 5'-W G T T G C C W-3'	ImHpHpImPyPy-γ-ImImPyPyPyPy
20	2081) 5'-W G T T C T T W-3'	ImHpHpPyHpHp-γ-PyPyImPyPyPy
	2082) 5'-W G T T C T A W-3'	ImHpHpPyHpPy-γ-HpPyImPyPyPy
	2083) 5'-W G T T C T G W-3'	ImHpHpPyHpIm-γ-PyPyImPyPyPy
	2084) 5'-W G T T C T C W-3'	ImHpHpPyHpPy-γ-ImPyImPyPyPy
	2085) 5'-W G T T C A T W-3'	ImHpHpPyPyHp-γ-PyHpImPyPyPy
25	2086) 5'-W G T T C A A W-3'	ImHpHpPyPyPy-γ-HpHpImPyPyPy
	2087) 5'-W G T T C A G W-3'	ImHpHpPyPyIm-γ-PyHpImPyPyPy
	2088) 5'-W G T T C A C W-3'	ImHpHpPyPyPy-γ-ImHpImPyPyPy
	2089) 5'-W G T T C G T W-3'	ImHpHpPyImHp-γ-PyPyImPyPyPy
	2090) 5'-W G T T C G A W-3'	ImHpHpPyImPy-γ-HpPyImPyPyPy
30	2091) 5'-W G T T C C T W-3'	ImHpHpPyPyHp-γ-PyImImPyPyPy
	2092) 5'-W G T T C C A W-3'	ImHpHpPyPyPy-γ-HpImImPyPyPy
	2093) 5'-W G T T C G G W-3'	ImHpHpPyImIm-γ-PyPyImPyPyPy
	2094) 5'-W G T T C G C W-3'	ImHpHpPyImPy-γ-ImPyImPyPyPy
	2095) 5'-W G T T C C G W-3'	ImHpHpPyPyIm-γ-PyImImPyPyPy
35	2096) 5'-W G T T C C C W-3'	ImHpHpPyPyPy-γ-ImImImPyPyPy

TABLE 112: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGTAWNNW-3'

	DNA sequence	aromatic amino acid sequence
	2097) 5'-W G T A T T T W-3'	ImHpPyHpHpHp-γ-PyPyPyHpPyPy
5	2098) 5'-W G T A T T A W-3'	ImHpPyHpHpPy-γ-HpPyPyHpPyPy
	2099) 5'-W G T A T T G W-3'	ImHpPyHpHpIm-γ-PyPyPyHpPyPy
	2100) 5'-W G T A T T C W-3'	ImHpPyHpHpPy-γ-ImPyPyHpPyPy
	2101) 5'-W G T A T A T W-3'	ImHpPyHpPyHp-γ-PyHpPyHpPyPy
	2102) 5'-W G T A T A A W-3'	ImHpPyHpPyPy-γ-HpHpPyHpPyPy
10	2103) 5'-W G T A T A G W-3'	ImHpPyHpPyIm-γ-PyHpPyHpPyPy
	2104) 5'-W G T A T A C W-3'	ImHpPyHpPyPy-γ-ImHpPyHpPyPy
	2105) 5'-W G T A T G T W-3'	ImHpPyHpImHp-γ-PyPyPyHpPyPy
	2106) 5'-W G T A T G A W-3'	ImHpPyHpImPy-γ-HpPyPyHpPyPy
	2107) 5'-W G T A T G G W-3'	ImHpPyHpImIm-γ-PyPyPyHpPyPy
	2108) 5'-W G T A T G C W-3'	ImHpPyHpImPy-γ-ImPyPyHpPyPy
	2109) 5'-W G T A T C T W-3'	ImHpPyHpPyHp-γ-PyImPyHpPyPy
	2110) 5'-W G T A T C A W-3'	ImHpPyHpPyPy-γ-HpImPyHpPyPy
	2111) 5'-W G T A T C G W-3'	ImHpPyHpPyIm-γ-PyImPyHpPyPy
	2112) 5'-W G T A T C C W-3'	ImHpPyHpPyPy-γ-ImImPyHpPyPy
20	2113) 5'-W G T A A T T W-3'	ImHpPyPyHpHp-γ-PyPyHpHpPyPy
	2114) 5'-W G T A A T A W-3'	ImHpPyPyHpPy-γ-HpPyHpHpPyPy
	2115) 5'-W G T A A T G W-3'	ImHpPyPyHpIm-γ-PyPyHpHpPyPy
	2116) 5'-W G T A A T C W-3'	ImHpPyPyHpPy-γ-ImPyHpHpPyPy
	2117) 5'-W G T A A A T W-3'	ImHpPyPyPyHp-γ-PyHpHpHpPyPy
25	2118) 5'-W G T A A A A W-3'	ImHpPyPyPyPy-γ-HpHpHpHpPyPy
	2119) 5'-W G T A A A G W-3'	ImHpPyPyPyIm-γ-PyHpHpHpPyPy
	2120) 5'-W G T A A A C W-3'	ImHpPyPyPyPy-γ-ImHpHpHpPyPy
	2121) 5'-W G T A A G T W-3'	ImHpPyPyImHp-γ-PyPyHpHpPyPy
	2122) 5'-W G T A A G A W-3'	ImHpPyPyImPy-γ-HpPyHpHpPyPy
30	2123) 5'-W G T A A G G W-3'	ImHpPyPyImIm-γ-PyPyHpHpPyPy
	2124) 5'-W G T A A G C W-3'	ImHpPyPyImPy-γ-ImPyHpHpPyPy
	2125) 5'-W G T A A C T W-3'	ImHpPyPyPyHp-γ-PyImHpHpPyPy
	2126) 5'-W G T A A C A W-3'	ImHpPyPyPyPy-γ-HpImHpHpPyPy
	2127) 5'-W G T A A C G W-3'	ImHpPyPyPyIm-γ-PyImHpHpPyPy
35	2128) 5'-W G T A A C C W-3'	ImHpPyPyPyPy-γ-ImImHpHpPyPy

TABLE 113: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGTASNNW-3'

	DNA sequence	aromatic amino acid sequence
	2129) 5'-W G T A G T T W-3'	ImHpPyImHpHp- γ -PyPyPyHpPyPy
5	2130) 5'-W G T A G T A W-3'	ImHpPyImHpPy- γ -HpPyPyHpPyPy
	2131) 5'-W G T A G T G W-3'	ImHpPyImHpIm- γ -PyPyPyHpPyPy
	2132) 5'-W G T A G T C W-3'	ImHpPyImHpPy- γ -ImPyPyHpPyPy
	2133) 5'-W G T A G A T W-3'	ImHpPyImPyHp- γ -PyHpPyHpPyPy
	2134) 5'-W G T A G A A W-3'	ImHpPyImPyPy- γ -HpHpPyHpPyPy
10	2135) 5'-W G T A G A G W-3'	ImHpPyImPyIm- γ -PyHpPyHpPyPy
	2136) 5'-W G T A G A C W-3'	ImHpPyImPyPy- γ -ImHpPyHpPyPy
	2137) 5'-W G T A G G T W-3'	ImHpPyImImHp- γ -PyPyPyHpPyPy
	2138) 5'-W G T A G G A W-3'	ImHpPyImImPy- γ -HpPyPyHpPyPy
	2139) 5'-W G T A G C T W-3'	ImHpPyImPyHp- γ -PyImPyHpPyPy
	2140) 5'-W G T A G C A W-3'	ImHpPyImPyPy- γ -HpImPyHpPyPy
	2141) 5'-W G T A G G G W-3'	ImHpPyImImIm- γ -PyPyPyHpPyPy
	2142) 5'-W G T A G G C W-3'	ImHpPyImImPy- γ -ImPyPyHpPyPy
	2143) 5'-W G T A G C G W-3'	ImHpPyImPyIm- γ -PyImPyHpPyPy
	2144) 5'-W G T A G C C W-3'	ImHpPyImPyPy- γ -ImImPyHpPyPy
	2145) 5'-W G T A C T T W-3'	ImHpPyPyHpHp- γ -PyPyImHpPyPy
	2146) 5'-W G T A C T A W-3'	ImHpPyPyHpPy- γ -HpPyImHpPyPy
	2147) 5'-W G T A C T G W-3'	ImHpPyPyHpIm- γ -PyPyImHpPyPy
	2148) 5'-W G T A C T C W-3'	ImHpPyPyHpPy- γ -ImPyImHpPyPy
	2149) 5'-W G T A C A T W-3'	ImHpPyPyPyHp- γ -PyHpImHpPyPy
25	2150) 5'-W G T A C A A W-3'	ImHpPyPyPyPy- γ -HpHpImHpPyPy
	2151) 5'-W G T A C A G W-3'	ImHpPyPyPyIm- γ -PyHpImHpPyPy
	2152) 5'-W G T A C A C W-3'	ImHpPyPyPyPy- γ -ImHpImHpPyPy
	2153) 5'-W G T A C G T W-3'	ImHpPyPyImHp- γ -PyPyImHpPyPy
	2154) 5'-W G T A C G A W-3'	ImHpPyPyImPy- γ -HpPyImHpPyPy
30	2155) 5'-W G T A C C T W-3'	ImHpPyPyPyHp- γ -PyImImHpPyPy
	2156) 5'-W G T A C C A W-3'	ImHpPyPyPyPy- γ -HpImImHpPyPy
	2157) 5'-W G T A C G G W-3'	ImHpPyPyImIm- γ -PyPyImHpPyPy
	2158) 5'-W G T A C G C W-3'	ImHpPyPyImPy- γ -ImPyImHpPyPy
	2159) 5'-W G T A C C G W-3'	ImHpPyPyPyIm- γ -PyImImHpPyPy
35	2160) 5'-W G T A C C C W-3'	ImHpPyPyPyPy- γ -ImImImHpPyPy

TABLE 114: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGTCWNNW-3'

	DNA sequence	aromatic amino acid sequence
	2161) 5'-W G T C T T T W-3'	ImHpPyHpHpHp-γ-PyPyPyImPyPy
5	2162) 5'-W G T C T T A W-3'	ImHpPyHpHpPy-γ-HpPyPyImPyPy
	2163) 5'-W G T C T T G W-3'	ImHpPyHpHpIm-γ-PyPyPyImPyPy
	2164) 5'-W G T C T T C W-3'	ImHpPyHpHpPy-γ-ImPyPyImPyPy
	2165) 5'-W G T C T A T W-3'	ImHpPyHpPyHp-γ-PyHpPyImPyPy
	2166) 5'-W G T C T A A W-3'	ImHpPyHpPyPy-γ-HpHpPyImPyPy
10	2167) 5'-W G T C T A G W-3'	ImHpPyHpPyIm-γ-PyHpPyImPyPy
	2168) 5'-W G T C T A C W-3'	ImHpPyHpPyPy-γ-ImHpPyImPyPy
	2169) 5'-W G T C T G T W-3'	ImHpPyHpImHp-γ-PyPyPyImPyPy
	2170) 5'-W G T C T G A W-3'	ImHpPyHpImPy-γ-HpPyPyImPyPy
	2171) 5'-W G T C T G G W-3'	ImHpPyHpImIm-γ-PyPyPyImPyPy
	2172) 5'-W G T C T G C W-3'	ImHpPyHpImPy-γ-ImPyPyImPyPy
	2173) 5'-W G T C T C T W-3'	ImHpPyHpPyHp-γ-PyImPyImPyPy
	2174) 5'-W G T C T C A W-3'	ImHpPyHpPyPy-γ-HpImPyImPyPy
	2175) 5'-W G T C T C G W-3'	ImHpPyHpPyIm-γ-PyImPyImPyPy
	2176) 5'-W G T C T C C W-3'	ImHpPyHpPyPy-γ-ImImPyImPyPy
20	2177) 5'-W G T C A T T W-3'	ImHpPyPyHpHp-γ-PyPyHpImPyPy
	2178) 5'-W G T C A T A W-3'	ImHpPyPyHpPy-γ-HpPyHpImPyPy
	2179) 5'-W G T C A T G W-3'	ImHpPyPyHpIm-γ-PyPyHpImPyPy
	2180) 5'-W G T C A T C W-3'	ImHpPyPyHpPy-γ-ImPyHpImPyPy
	2181) 5'-W G T C A A T W-3'	ImHpPyPyPyHp-γ-PyHpHpImPyPy
25	2182) 5'-W G T C A A A W-3'	ImHpPyPyPyPy-γ-HpHpHpImPyPy
	2183) 5'-W G T C A A G W-3'	ImHpPyPyPyIm-γ-PyHpHpImPyPy
	2184) 5'-W G T C A A C W-3'	ImHpPyPyPyPy-γ-ImHpHpImPyPy
	2185) 5'-W G T C A G T W-3'	ImHpPyPyImHp-γ-PyPyHpImPyPy
	2186) 5'-W G T C A G A W-3'	ImHpPyPyImPy-γ-HpPyHpImPyPy
30	2187) 5'-W G T C A G G W-3'	ImHpPyPyImIm-γ-PyPyHpImPyPy
	2188) 5'-W G T C A G C W-3'	ImHpPyPyImPy-γ-ImPyHpImPyPy
	2189) 5'-W G T C A C T W-3'	ImHpPyPyPyHp-γ-PyImHpImPyPy
	2190) 5'-W G T C A C A W-3'	ImHpPyPyPyPy-γ-HpImHpImPyPy
	2191) 5'-W G T C A C G W-3'	ImHpPyPyPyIm-γ-PyImHpImPyPy
35	2192) 5'-W G T C A C C W-3'	ImHpPyPyPyPy-γ-ImImHpImPyPy

TABLE 115: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WGTCNNW-3'

DNA sequence		aromatic amino acid sequence
2193)	5'-W G T C G T T W-3'	ImHpPyImHpHp- γ -PyPyPyImPyPy
2194)	5'-W G T C G T A W-3'	ImHpPyImHpPy- γ -HpPyPyImPyPy
2195)	5'-W G T C G T G W-3'	ImHpPyImHpIm- γ -PyPyPyImPyPy
2196)	5'-W G T C G T C W-3'	ImHpPyImHpPy- γ -ImPyPyImPyPy
2197)	5'-W G T C G A T W-3'	ImHpPyImPyHp- γ -PyHpPyImPyPy
2198)	5'-W G T C G A A W-3'	ImHpPyImPyPy- γ -HpHpPyImPyPy
2199)	5'-W G T C G A G W-3'	ImHpPyImPyIm- γ -PyHpPyImPyPy
2200)	5'-W G T C G A C W-3'	ImHpPyImPyPy- γ -ImHpPyImPyPy
2201)	5'-W G T C G G T W-3'	ImHpPyImImHp- γ -PyPyPyImPyPy
2202)	5'-W G T C G G A W-3'	ImHpPyImImPy- γ -HpPyPyImPyPy
2203)	5'-W G T C G C T W-3'	ImHpPyImPyHp- γ -PyImPyImPyPy
2204)	5'-W G T C G C A W-3'	ImHpPyImPyPy- γ -HpImPyImPyPy
2205)	5'-W G T C C T T W-3'	ImHpPyPyHpHp- γ -PyPyImImPyPy
2206)	5'-W G T C C T A W-3'	ImHpPyPyHpPy- γ -HpPyImImPyPy
2207)	5'-W G T C C T G W-3'	ImHpPyPyHpIm- γ -PyPyImImPyPy
2208)	5'-W G T C C T C W-3'	ImHpPyPyHpPy- γ -ImPyImImPyPy
2209)	5'-W G T C C A T W-3'	ImHpPyPyPyHp- γ -PyHpImImPyPy
2210)	5'-W G T C C A A W-3'	ImHpPyPyPyPy- γ -HpHpImImPyPy
2211)	5'-W G T C C A G W-3'	ImHpPyPyPyIm- γ -PyHpImImPyPy
2212)	5'-W G T C C A C W-3'	ImHpPyPyPyPy- γ -ImHpImImPyPy
2213)	5'-W G T C C G T W-3'	ImHpPyPyImHp- γ -PyPyImImPyPy
2214)	5'-W G T C C G A W-3'	ImHpPyPyImPy- γ -HpPyImImPyPy
2215)	5'-W G T C C C T W-3'	ImHpPyPyPyHp- γ -PyImImImPyPy
2216)	5'-W G T C C C A W-3'	ImHpPyPyPyPy- γ -HpImImImPyPy
2217)	5'-W G T C G G G W-3'	ImHpPyImImIm- γ -PyPyPyImPyPy
2218)	5'-W G T C G G C W-3'	ImHpPyImImPy- γ -ImPyPyImPyPy
2219)	5'-W G T C G C G W-3'	ImHpPyImPyIm- γ -PyImPyImPyPy
2220)	5'-W G T C G C C W-3'	ImHpPyImPyPy- γ -ImImPyImPyPy
2221)	5'-W G T C C G G W-3'	ImHpPyPyImIm- γ -PyPyImImPyPy
2222)	5'-W G T C C G C W-3'	ImHpPyPyImPy- γ -ImPyImImPyPy
2223)	5'-W G T C C C G W-3'	ImHpPyPyPyIm- γ -PyImImImPyPy
2224)	5'-W G T C C C C W-3'	ImHpPyPyPyPy- γ -ImImImImPyPy

TABLE 116: 12-ring Hairpin Polyamides for recognition of 8-bp 5'WCGGWNNW-3'

DNA sequence		aromatic amino acid sequence
2225)	5'W C G G T T T W-3'	PyImImHpHpHp-γ-PyPyPyPyPyIm
2226)	5'W C G G T T A W-3'	PyImImHpHpPy-γ-HpPyPyPyPyIm
2227)	5'W C G G T T G W-3'	PyImImHpHpIm-γ-PyPyPyPyPyIm
2228)	5'W C G G T T C W-3'	PyImImHpHpPy-γ-ImPyPyPyPyIm
2229)	5'W C G G T A T W-3'	PyImImHpPyHp-γ-PyHpPyPyPyIm
2230)	5'W C G G T A A W-3'	PyImImHpPyPy-γ-HpHpPyPyPyIm
2231)	5'W C G G T A G W-3'	PyImImHpPyIm-γ-PyHpPyPyPyIm
2232)	5'W C G G T A C W-3'	PyImImHpPyPy-γ-ImHpPyPyPyIm
2233)	5'W C G G T G T W-3'	PyImImHpImHp-γ-PyPyPyPyPyIm
2234)	5'W C G G T G A W-3'	PyImImHpImPy-γ-HpPyPyPyPyIm
2235)	5'W C G G T G G W-3'	PyImImHpImIm-γ-PyPyPyPyPyIm
2236)	5'W C G G T G C W-3'	PyImImHpImPy-γ-ImPyPyPyPyIm
2237)	5'W C G G T C T W-3'	PyImImHpPyHp-γ-PyImPyPyPyIm
2238)	5'W C G G T C A W-3'	PyImImHpPyPy-γ-HpImPyPyPyIm
2239)	5'W C G G T C G W-3'	PyImImHpPyIm-γ-PyImPyPyPyIm
2240)	5'W C G G T C C W-3'	PyImImHpPyPy-γ-ImImPyPyPyIm
2241)	5'W C G G A T T W-3'	PyImImPyHpHp-γ-PyPyHpPyPyIm
2242)	5'W C G G A T A W-3'	PyImImPyHpPy-γ-HpPyHpPyPyIm
2243)	5'W C G G A T G W-3'	PyImImPyHpIm-γ-PyPyHpPyPyIm
2244)	5'W C G G A T C W-3'	PyImImPyHpPy-γ-ImPyHpPyPyIm
2245)	5'W C G G A A T W-3'	PyImImPyPyHp-γ-PyHpHpPyPyIm
2246)	5'W C G G A A A W-3'	PyImImPyPyPy-γ-HpHpHpPyPyIm
2247)	5'W C G G A A G W-3'	PyImImPyPyIm-γ-PyHpHpPyPyIm
2248)	5'W C G G A A C W-3'	PyImImPyPyPy-γ-ImHpHpPyPyIm
2249)	5'W C G G A G T W-3'	PyImImPyImHp-γ-PyPyHpPyPyIm
2250)	5'W C G G A G A W-3'	PyImImPyImPy-γ-HpPyHpPyPyIm
2251)	5'W C G G A G G W-3'	PyImImPyImIm-γ-PyPyHpPyPyIm
2252)	5'W C G G A G C W-3'	PyImImPyImPy-γ-ImPyHpPyPyIm
2253)	5'W C G G A C T W-3'	PyImImPyPyHp-γ-PyImHpPyPyIm
2254)	5'W C G G A C A W-3'	PyImImPyPyPy-γ-HpImHpPyPyIm
2255)	5'W C G G A C G W-3'	PyImImPyPyIm-γ-PyImHpPyPyIm
2256)	5'W C G G A C C W-3'	PyImImPyPyPy-γ-ImImHpPyPyIm

TABLE 117: 12-ring Hairpin Polyamides for recognition of 8-bp 5'WCGGSNNW-3'

DNA sequence		aromatic amino acid sequence
2257)	5'W C G G G T T W-3'	PyImImImHpHp-γ-PyPyPyPyPyIm
2258)	5'W C G G G T A W-3'	PyImImImHpPy-γ-HpPyPyPyPyIm
2259)	5'W C G G G T G W-3'	PyImImImHpIm-γ-PyPyPyPyPyIm
2260)	5'W C G G G T C W-3'	PyImImImHpPy-γ-ImPyPyPyPyIm
2261)	5'W C G G G A T W-3'	PyImImImPyHp-γ-PyHpPyPyPyIm
2262)	5'W C G G G A A W-3'	PyImImImPyPy-γ-HpHpPyPyPyIm
2263)	5'W C G G G A G W-3'	PyImImImPyIm-γ-PyHpPyPyPyIm
2264)	5'W C G G G A C W-3'	PyImImImPyPy-γ-ImHpPyPyPyIm
2265)	5'W C G G G G T W-3'	PyImImImImHp-γ-PyPyPyPyPyIm
2266)	5'W C G G G G A W-3'	PyImImImImPy-γ-HpPyPyPyPyIm
2267)	5'W C G G G C T W-3'	PyImImImPyHp-γ-PyImPyPyPyIm
2268)	5'W C G G G C A W-3'	PyImImImPyPy-γ-HpImPyPyPyIm
2269)	5'W C G G C T T W-3'	PyImImPyHpHp-γ-PyPyImPyPyIm
2270)	5'W C G G C T A W-3'	PyImImPyHpPy-γ-HpPyImPyPyIm
2271)	5'W C G G C T G W-3'	PyImImPyHpIm-γ-PyPyImPyPyIm
2272)	5'W C G G C T C W-3'	PyImImPyHpPy-γ-ImPyImPyPyIm
2273)	5'W C G G C A T W-3'	PyImImPyPyHp-γ-PyHpImPyPyIm
2274)	5'W C G G C A A W-3'	PyImImPyPyPy-γ-HpHpImPyPyIm
2275)	5'W C G G C A G W-3'	PyImImPyPyIm-γ-PyHpImPyPyIm
2276)	5'W C G G C A C W-3'	PyImImPyPyPy-γ-ImHpImPyPyIm
2277)	5'W C G G C G T W-3'	PyImImPyImHp-γ-PyPyImPyPyIm
2278)	5'W C G G C G A W-3'	PyImImPyImPy-γ-HpPyImPyPyIm
2279)	5'W C G G C C T W-3'	PyImImPyPyHp-γ-PyImImPyPyIm
2280)	5'W C G G C C A W-3'	PyImImPyPyPy-γ-HpImImPyPyIm
G83)	5'W C G G G G G W-3'	PyImImImImIm-γ-PyPyPyPyPyIm
G84)	5'W C G G G G C W-3'	PyImImImImPy-γ-ImPyPyPyPyIm
G85)	5'W C G G G C G W-3'	PyImImImPyIm-γ-PyImPyPyPyIm
G86)	5'W C G G G C C W-3'	PyImImImPyPy-γ-ImImPyPyPyIm
G87)	5'W C G G C G G W-3'	PyImImPyImIm-γ-PyPyImPyPyIm
G88)	5'W C G G C G C W-3'	PyImImPyImPy-γ-ImPyImPyPyIm
G89)	5'W C G G C C G W-3'	PyImImPyPyIm-γ-PyImImPyPyIm
G90)	5'W C G G C C C W-3'	PyImImPyPyPy-γ-ImImImPyPyIm

TABLE 118: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCGTWNNW-3'

	DNA sequence	aromatic amino acid sequence
5	2281) 5'W C G T T T W-3'	PyImHpHpHp-γ-PyPyPyPyPyIm
	2282) 5'W C G T T T A W-3'	PyImHpHpHpPy-γ-HpPyPyPyPyIm
	2283) 5'W C G T T T G W-3'	PyImHpHpHpIm-γ-PyPyPyPyPyIm
	2284) 5'W C G T T T C W-3'	PyImHpHpHpPy-γ-ImPyPyPyPyIm
	2285) 5'W C G T T A T W-3'	PyImHpHpPyHp-γ-PyHpPyPyPyIm
	2286) 5'W C G T T A A W-3'	PyImHpHpPyPy-γ-HpHpPyPyPyIm
10	2287) 5'W C G T T A G W-3'	PyImHpHpPyIm-γ-PyHpPyPyPyIm
	2288) 5'W C G T T A C W-3'	PyImHpHpPyPy-γ-ImHpPyPyPyIm
	2289) 5'W C G T T G T W-3'	PyImHpHpImHp-γ-PyPyPyPyPyIm
	2290) 5'W C G T T G A W-3'	PyImHpHpImPy-γ-HpPyPyPyPyIm
	2291) 5'W C G T T G G W-3'	PyImHpHpImIm-γ-PyPyPyPyPyIm
	2292) 5'W C G T T G C W-3'	PyImHpHpImPy-γ-ImPyPyPyPyIm
	2293) 5'W C G T T C T W-3'	PyImHpHpPyHp-γ-PyImPyPyPyIm
	2294) 5'W C G T T C A W-3'	PyImHpHpPyPy-γ-HpImPyPyPyIm
	2295) 5'W C G T T C G W-3'	PyImHpHpPyIm-γ-PyImPyPyPyIm
	2296) 5'W C G T T C C W-3'	PyImHpHpPyPy-γ-ImImPyPyPyIm
20	2297) 5'W C G T A T T W-3'	PyImHpPyHpHp-γ-PyPyHpPyPyIm
	2298) 5'W C G T A T A W-3'	PyImHpPyHpPy-γ-HpPyHpPyPyIm
	2299) 5'W C G T A T G W-3'	PyImHpPyHpIm-γ-PyPyHpPyPyIm
	2300) 5'W C G T A T C W-3'	PyImHpPyHpPy-γ-ImPyHpPyPyIm
	2301) 5'W C G T A A T W-3'	PyImHpPyPyHp-γ-PyHpHpPyPyIm
25	2302) 5'W C G T A A A W-3'	PyImHpPyPyPy-γ-HpHpHpPyPyIm
	2303) 5'W C G T A A G W-3'	PyImHpPyPyIm-γ-PyHpHpPyPyIm
	2304) 5'W C G T A A C W-3'	PyImHpPyPyPy-γ-ImHpHpPyPyIm
	2305) 5'W C G T A G T W-3'	PyImHpPyImHp-γ-PyPyHpPyPyIm
	2306) 5'W C G T A G A W-3'	PyImHpPyImPy-γ-HpPyHpPyPyIm
30	2307) 5'W C G T A G G W-3'	PyImHpPyImIm-γ-PyPyHpPyPyIm
	2308) 5'W C G T A G C W-3'	PyImHpPyImPy-γ-ImPyHpPyPyIm
	2309) 5'W C G T A C T W-3'	PyImHpPyPyHp-γ-PyImHpPyPyIm
	2310) 5'W C G T A C A W-3'	PyImHpPyPyPy-γ-HpImHpPyPyIm
	2311) 5'W C G T A C G W-3'	PyImHpPyPyIm-γ-PyImHpPyPyIm
35	2312) 5'W C G T A C C W-3'	PyImHpPyPyPy-γ-ImImHpPyPyIm

TABLE 119: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCGTSNNW-3'

DNA sequence		aromatic amino acid sequence
2313)	5'W C G T G T T W-3'	PyImHpImHpHp-γ-PyPyPyPyPyIm
2314)	5'W C G T G T A W-3'	PyImHpImHpPy-γ-HpPyPyPyPyIm
2315)	5'W C G T G T G W-3'	PyImHpImHpIm-γ-PyPyPyPyPyIm
2316)	5'W C G T G T C W-3'	PyImHpImHpPy-γ-ImPyPyPyPyIm
2317)	5'W C G T G A T W-3'	PyImHpImPyHp-γ-PyHpPyPyPyIm
2318)	5'W C G T G A A W-3'	PyImHpImPyPy-γ-HpHpPyPyPyIm
2319)	5'W C G T G A G W-3'	PyImHpImPyIm-γ-PyHpPyPyPyIm
2320)	5'W C G T G A C W-3'	PyImHpImPyPy-γ-ImHpPyPyPyIm
2321)	5'W C G T G G T W-3'	PyImHpImImHp-γ-PyPyPyPyPyIm
2322)	5'W C G T G G A W-3'	PyImHpImImPy-γ-HpPyPyPyPyIm
2323)	5'W C G T G C T W-3'	PyImHpImPyHp-γ-PyImPyPyPyIm
2324)	5'W C G T G C A W-3'	PyImHpImPyPy-γ-HpImPyPyPyIm
2325)	5'W C G T G G G W-3'	PyImHpImImIm-γ-PyPyPyPyPyIm
2326)	5'W C G T G G C W-3'	PyImHpImImPy-γ-ImPyPyPyPyIm
2327)	5'W C G T G C G W-3'	PyImHpImPyIm-γ-PyImPyPyPyIm
2328)	5'W C G T G C C W-3'	PyImHpImPyPy-γ-ImImPyPyPyIm
2329)	5'W C G T C T T W-3'	PyImHpPyHpHp-γ-PyPyImPyPyIm
2330)	5'W C G T C T A W-3'	PyImHpPyHpPy-γ-HpPyImPyPyIm
2331)	5'W C G T C T G W-3'	PyImHpPyHpIm-γ-PyPyImPyPyIm
2332)	5'W C G T C T C W-3'	PyImHpPyHpPy-γ-ImPyImPyPyIm
2333)	5'W C G T C A T W-3'	PyImHpPyPyHp-γ-PyHpImPyPyIm
2334)	5'W C G T C A A W-3'	PyImHpPyPyPy-γ-HpHpImPyPyIm
2335)	5'W C G T C A G W-3'	PyImHpPyPyIm-γ-PyHpImPyPyIm
2336)	5'W C G T C A C W-3'	PyImHpPyPyPy-γ-ImHpImPyPyIm
2337)	5'W C G T C G T W-3'	PyImHpPyImHp-γ-PyPyImPyPyIm
2338)	5'W C G T C G A W-3'	PyImHpPyImPy-γ-HpPyImPyPyIm
2339)	5'W C G T C C T W-3'	PyImHpPyPyHp-γ-PyImImPyPyIm
2340)	5'W C G T C C A W-3'	PyImHpPyPyPy-γ-HpImImPyPyIm
2341)	5'W C G T C G G W-3'	PyImHpPyImIm-γ-PyPyImPyPyIm
2342)	5'W C G T C G C W-3'	PyImHpPyImPy-γ-ImPyImPyPyIm
2343)	5'W C G T C C G W-3'	PyImHpPyPyIm-γ-PyImImPyPyIm
2344)	5'W C G T C C C W-3'	PyImHpPyPyPy-γ-ImImImPyPyIm

TABLE 120: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCGAWNNW-3'

	DNA sequence	aromatic amino acid sequence
	2345) 5'W C G A T T T W-3'	PyImPyHpHpHp-γ-PyPyPyHpPyIm
5	2346) 5'W C G A T T A W-3'	PyImPyHpHpPy-γ-HpPyPyHpPyIm
	2347) 5'W C G A T T G W-3'	PyImPyHpHpIm-γ-PyPyPyHpPyIm
	2348) 5'W C G A T T C W-3'	PyImPyHpHpPy-γ-ImPyPyHpPyIm
	2349) 5'W C G A T A T W-3'	PyImPyHpPyHp-γ-PyHpPyHpPyIm
	2350) 5'W C G A T A A W-3'	PyImPyHpPyPy-γ-HpHpPyHpPyIm
10	2351) 5'W C G A T A G W-3'	PyImPyHpPyIm-γ-PyHpPyHpPyIm
	2352) 5'W C G A T A C W-3'	PyImPyHpPyPy-γ-ImHpPyHpPyIm
	2353) 5'W C G A T G T W-3'	PyImPyHpImHp-γ-PyPyPyHpPyIm
	2354) 5'W C G A T G A W-3'	PyImPyHpImPy-γ-HpPyPyHpPyIm
	2355) 5'W C G A T G G W-3'	PyImPyHpImIm-γ-PyPyPyHpPyIm
	2356) 5'W C G A T G C W-3'	PyImPyHpImPy-γ-ImPyPyHpPyIm
	2357) 5'W C G A T C T W-3'	PyImPyHpPyHp-γ-PyImPyHpPyIm
	2358) 5'W C G A T C A W-3'	PyImPyHpPyPy-γ-HpImPyHpPyIm
	2359) 5'W C G A T C G W-3'	PyImPyHpPyIm-γ-PyImPyHpPyIm
	2360) 5'W C G A T C C W-3'	PyImPyHpPyPy-γ-ImImPyHpPyIm
	2361) 5'W C G A A T T W-3'	PyImPyPyHpHp-γ-PyPyHpHpPyIm
	2362) 5'W C G A A T A W-3'	PyImPyPyHpPy-γ-HpPyHpHpPyIm
	2363) 5'W C G A A T G W-3'	PyImPyPyHpIm-γ-PyPyHpHpPyIm
	2364) 5'W C G A A T C W-3'	PyImPyPyHpPy-γ-ImPyHpHpPyIm
	2365) 5'W C G A A A T W-3'	PyImPyPyPyHp-γ-PyHpHpHpPyIm
25	2366) 5'W C G A A A A W-3'	PyImPyPyPyPy-γ-HpHpHpHpPyIm
	2367) 5'W C G A A A G W-3'	PyImPyPyPyIm-γ-PyHpHpHpPyIm
	2368) 5'W C G A A A C W-3'	PyImPyPyPyPy-γ-ImHpHpHpPyIm
	2369) 5'W C G A A G T W-3'	PyImPyPyImHp-γ-PyPyHpHpPyIm
	2370) 5'W C G A A G A W-3'	PyImPyPyImPy-γ-HpPyHpHpPyIm
30	2371) 5'W C G A A G G W-3'	PyImPyPyImIm-γ-PyPyHpHpPyIm
	2372) 5'W C G A A G C W-3'	PyImPyPyImPy-γ-ImPyHpHpPyIm
	2373) 5'W C G A A C T W-3'	PyImPyPyPyHp-γ-PyImHpHpPyIm
	2374) 5'W C G A A C A W-3'	PyImPyPyPyPy-γ-HpImHpHpPyIm
	2375) 5'W C G A A C G W-3'	PyImPyPyPyIm-γ-PyImHpHpPyIm
35	2376) 5'W C G A A C C W-3'	PyImPyPyPyPy-γ-ImImHpHpPyIm

TABLE 121: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCGASNNW-3'

	DNA sequence	aromatic amino acid sequence
	2377) 5'W C G A G T T W-3'	PyImPyImHpHp-γ-PyPyPyHpPyIm
5	2378) 5'W C G A G T A W-3'	PyImPyImHpPy-γ-HpPyPyHpPyIm
	2379) 5'W C G A G T G W-3'	PyImPyImHpIm-γ-PyPyPyHpPyIm
	2380) 5'W C G A G T C W-3'	PyImPyImHpPy-γ-ImPyPyHpPyIm
	2381) 5'W C G A G A T W-3'	PyImPyImPyHp-γ-PyHpPyHpPyIm
	2382) 5'W C G A G A A W-3'	PyImPyImPyPy-γ-HpHpPyHpPyIm
10	2383) 5'W C G A G A G W-3'	PyImPyImPyIm-γ-PyHpPyHpPyIm
	2384) 5'W C G A G A C W-3'	PyImPyImPyPy-γ-ImHpPyHpPyIm
	2385) 5'W C G A G G T W-3'	PyImPyImImHp-γ-PyPyPyHpPyIm
	2386) 5'W C G A G G A W-3'	PyImPyImImPy-γ-HpPyPyHpPyIm
	2387) 5'W C G A G C T W-3'	PyImPyImPyHp-γ-PyImPyHpPyIm
	2388) 5'W C G A G C A W-3'	PyImPyImPyPy-γ-HpImPyHpPyIm
	2389) 5'W C G A G G G W-3'	PyImPyImImIm-γ-PyPyPyHpPyIm
	2390) 5'W C G A G G C W-3'	PyImPyImImPy-γ-ImPyPyHpPyIm
	2391) 5'W C G A G C G W-3'	PyImPyImPyIm-γ-PyImPyHpPyIm
	2392) 5'W C G A G C C W-3'	PyImPyImPyPy-γ-ImImPyHpPyIm
20	2393) 5'W C G A C T T W-3'	PyImPyPyHpHp-γ-PyPyImHpPyIm
	2394) 5'W C G A C T A W-3'	PyImPyPyHpPy-γ-HpPyImHpPyIm
	2395) 5'W C G A C T G W-3'	PyImPyPyHpIm-γ-PyPyImHpPyIm
	2396) 5'W C G A C T C W-3'	PyImPyPyHpPy-γ-ImPyImHpPyIm
	2397) 5'W C G A C A T W-3'	PyImPyPyPyHp-γ-PyHpImHpPyIm
25	2398) 5'W C G A C A A W-3'	PyImPyPyPyPy-γ-HpHpImHpPyIm
	2399) 5'W C G A C A G W-3'	PyImPyPyPyIm-γ-PyHpImHpPyIm
	2400) 5'W C G A C A C W-3'	PyImPyPyPyPy-γ-ImHpImHpPyIm
	2401) 5'W C G A C G T W-3'	PyImPyPyImHp-γ-PyPyImHpPyIm
	2402) 5'W C G A C G A W-3'	PyImPyPyImPy-γ-HpPyImHpPyIm
30	2403) 5'W C G A C C T W-3'	PyImPyPyPyHp-γ-PyImImHpPyIm
	2404) 5'W C G A C C A W-3'	PyImPyPyPyPy-γ-HpImImHpPyIm
	2405) 5'W C G A C G G W-3'	PyImPyPyImIm-γ-PyPyImHpPyIm
	2406) 5'W C G A C G C W-3'	PyImPyPyImPy-γ-ImPyImHpPyIm
	2407) 5'W C G A C C G W-3'	PyImPyPyPyIm-γ-PyImImHpPyIm
35	2408) 5'W C G A C C C W-3'	PyImPyPyPyPy-γ-ImImImHpPyIm

TABLE 122: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCGCWNNW-3'

	DNA sequence	aromatic amino acid sequence
	2409) 5'W C G C T T T W-3'	PyImPyHpHpHp-γ-PyPyPyImPyIm
5	2410) 5'W C G C T T A W-3'	PyImPyHpHpPy-γ-HpPyPyImPyIm
	2411) 5'W C G C T T G W-3'	PyImPyHpHpIm-γ-PyPyPyImPyIm
	2412) 5'W C G C T T C W-3'	PyImPyHpHpPy-γ-ImPyPyImPyIm
	2413) 5'W C G C T A T W-3'	PyImPyHpPyHp-γ-PyHpPyImPyIm
	2414) 5'W C G C T A A W-3'	PyImPyHpPyPy-γ-HpHpPyImPyIm
10	2415) 5'W C G C T A G W-3'	PyImPyHpPyIm-γ-PyHpPyImPyIm
	2416) 5'W C G C T A C W-3'	PyImPyHpPyPy-γ-ImHpPyImPyIm
	2417) 5'W C G C T G T W-3'	PyImPyHpImHp-γ-PyPyPyImPyIm
	2418) 5'W C G C T G A W-3'	PyImPyHpImPy-γ-HpPyPyImPyIm
	2419) 5'W C G C T G G W-3'	PyImPyHpImIm-γ-PyPyPyImPyIm
	2420) 5'W C G C T G C W-3'	PyImPyHpImPy-γ-ImPyPyImPyIm
	2421) 5'W C G C T C T W-3'	PyImPyHpPyHp-γ-PyImPyImPyIm
	2422) 5'W C G C T C A W-3'	PyImPyHpPyPy-γ-HpImPyImPyIm
	2423) 5'W C G C T C G W-3'	PyImPyHpPyIm-γ-PyImPyImPyIm
	2424) 5'W C G C T C C W-3'	PyImPyHpPyPy-γ-ImImPyImPyIm
20	2425) 5'W C G C A T T W-3'	PyImPyPyHpHp-γ-PyPyHpImPyIm
	2426) 5'W C G C A T A W-3'	PyImPyPyHpPy-γ-HpPyHpImPyIm
	2427) 5'W C G C A T G W-3'	PyImPyPyHpIm-γ-PyPyHpImPyIm
	2428) 5'W C G C A T C W-3'	PyImPyPyHpPy-γ-ImPyHpImPyIm
	2429) 5'W C G C A A T W-3'	PyImPyPyPyHp-γ-PyHpHpImPyIm
25	2430) 5'W C G C A A A W-3'	PyImPyPyPyPy-γ-HpHpHpImPyIm
	2431) 5'W C G C A A G W-3'	PyImPyPyPyIm-γ-PyHpHpImPyIm
	2432) 5'W C G C A A C W-3'	PyImPyPyPyPy-γ-ImHpHpImPyIm
	2433) 5'W C G C A G T W-3'	PyImPyPyImHp-γ-PyPyHpImPyIm
	2434) 5'W C G C A G A W-3'	PyImPyPyImPy-γ-HpPyHpImPyIm
30	2435) 5'W C G C A G G W-3'	PyImPyPyImIm-γ-PyPyHpImPyIm
	2436) 5'W C G C A G C W-3'	PyImPyPyImPy-γ-ImPyHpImPyIm
	2437) 5'W C G C A C T W-3'	PyImPyPyPyHp-γ-PyImHpImPyIm
	2438) 5'W C G C A C A W-3'	PyImPyPyPyPy-γ-HpImHpImPyIm
	2439) 5'W C G C A C G W-3'	PyImPyPyPyIm-γ-PyImHpImPyIm
35	2440) 5'W C G C A C C W-3'	PyImPyPyPyPy-γ-ImImHpImPyIm

TABLE 123: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCGCSNNW-3'

DNA sequence		aromatic amino acid sequence
2441)	5'W C G C G T T W-3'	PyImPyImHpHp-γ-PyPyPyImPyIm
2442)	5'W C G C G T A W-3'	PyImPyImHpPy-γ-HpPyPyImPyIm
2443)	5'W C G C G T G W-3'	PyImPyImHpIm-γ-PyPyPyImPyIm
2444)	5'W C G C G T C W-3'	PyImPyImHpPy-γ-ImPyPyImPyIm
2445)	5'W C G C G A T W-3'	PyImPyImPyHp-γ-PyHpPyImPyIm
2446)	5'W C G C G A A W-3'	PyImPyImPyPy-γ-HpHpPyImPyIm
2447)	5'W C G C G A G W-3'	PyImPyImPyIm-γ-PyHpPyImPyIm
2448)	5'W C G C G A C W-3'	PyImPyImPyPy-γ-ImHpPyImPyIm
2449)	5'W C G C G G T W-3'	PyImPyImImHp-γ-PyPyPyImPyIm
2450)	5'W C G C G G A W-3'	PyImPyImImPy-γ-HpPyPyImPyIm
2451)	5'W C G C G C T W-3'	PyImPyImPyHp-γ-PyImPyImPyIm
2452)	5'W C G C G C A W-3'	PyImPyImPyPy-γ-HpImPyImPyIm
2453)	5'W C G C C T T W-3'	PyImPyPyHpHp-γ-PyPyImImPyIm
2454)	5'W C G C C T A W-3'	PyImPyPyHpPy-γ-HpPyImImPyIm
2455)	5'W C G C C T G W-3'	PyImPyPyHpIm-γ-PyPyImImPyIm
2456)	5'W C G C C T C W-3'	PyImPyPyHpPy-γ-ImPyImImPyIm
2457)	5'W C G C C A T W-3'	PyImPyPyPyHp-γ-PyHpImImPyIm
2458)	5'W C G C C A A W-3'	PyImPyPyPyPy-γ-HpHpImImPyIm
2459)	5'W C G C C A G W-3'	PyImPyPyPyIm-γ-PyHpImImPyIm
2460)	5'W C G C C A C W-3'	PyImPyPyPyPy-γ-ImHpImImPyIm
2461)	5'W C G C C G T W-3'	PyImPyPyImHp-γ-PyPyImImPyIm
2462)	5'W C G C C G A W-3'	PyImPyPyImPy-γ-HpPyImImPyIm
2463)	5'W C G C C C T W-3'	PyImPyPyPyHp-γ-PyImImImPyIm
2464)	5'W C G C C C A W-3'	PyImPyPyPyPy-γ-HpImImImPyIm
G91)	5'W C G C G G G W-3'	PyImPyImImIm-γ-PyPyPyImPyIm
G92)	5'W C G C G G C W-3'	PyImPyImImPy-γ-ImPyPyImPyIm
G93)	5'W C G C G C G W-3'	PyImPyImPyIm-γ-PyImPyImPyIm
G94)	5'W C G C G C C W-3'	PyImPyImPyPy-γ-ImImPyImPyIm
G95)	5'W C G C C G G W-3'	PyImPyPyImIm-γ-PyPyImImPyIm
G96)	5'W C G C C G C W-3'	PyImPyPyImPy-γ-ImPyImImPyIm
G97)	5'W C G C C C G W-3'	PyImPyPyPyIm-γ-PyImImImPyIm
G98)	5'W C G C C C C W-3'	PyImPyPyPyPy-γ-ImImImImPyIm

TABLE 124: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCCGWNNW-3'

DNA sequence		aromatic amino acid sequence
2465)	5'W C C G T T T W-3'	PyPyImHpHpHp-γ-PyPyPyPyImIm
2466)	5'W C C G T T A W-3'	PyPyImHpHpPy-γ-HpPyPyPyImIm
2467)	5'W C C G T T G W-3'	PyPyImHpHpIm-γ-PyPyPyPyImIm
2468)	5'W C C G T T C W-3'	PyPyImHpHpPy-γ-ImPyPyPyImIm
2469)	5'W C C G T A T W-3'	PyPyImHpPyHp-γ-PyHpPyPyImIm
2470)	5'W C C G T A A W-3'	PyPyImHpPyPy-γ-HpHpPyPyImIm
2471)	5'W C C G T A G W-3'	PyPyImHpPyIm-γ-PyHpPyPyImIm
2472)	5'W C C G T A C W-3'	PyPyImHpPyPy-γ-ImHpPyPyImIm
2473)	5'W C C G T G T W-3'	PyPyImHpImHp-γ-PyPyPyPyImIm
2474)	5'W C C G T G A W-3'	PyPyImHpImPy-γ-HpPyPyPyImIm
2475)	5'W C C G T G G W-3'	PyPyImHpImIm-γ-PyPyPyPyImIm
2476)	5'W C C G T G C W-3'	PyPyImHpImPy-γ-ImPyPyPyImIm
2477)	5'W C C G T C T W-3'	PyPyImHpPyHp-γ-PyImPyPyImIm
2478)	5'W C C G T C A W-3'	PyPyImHpPyPy-γ-HpImPyPyImIm
2479)	5'W C C G T C G W-3'	PyPyImHpPyIm-γ-PyImPyPyImIm
2480)	5'W C C G T C C W-3'	PyPyImHpPyPy-γ-ImImPyPyImIm
2481)	5'W C C G A T T W-3'	PyPyImPyHpHp-γ-PyPyHpPyImIm
2482)	5'W C C G A T A W-3'	PyPyImPyHpPy-γ-HpPyHpPyImIm
2483)	5'W C C G A T G W-3'	PyPyImPyHpIm-γ-PyPyHpPyImIm
2484)	5'W C C G A T C W-3'	PyPyImPyHpPy-γ-ImPyHpPyImIm
2485)	5'W C C G A A T W-3'	PyPyImPyPyHp-γ-PyHpHpPyImIm
2486)	5'W C C G A A A W-3'	PyPyImPyPyPy-γ-HpHpHpPyImIm
2487)	5'W C C G A A G W-3'	PyPyImPyPyIm-γ-PyHpHpPyImIm
2488)	5'W C C G A A C W-3'	PyPyImPyPyPy-γ-ImHpHpPyImIm
2489)	5'W C C G A G T W-3'	PyPyImPyImHp-γ-PyPyHpPyImIm
2490)	5'W C C G A G A W-3'	PyPyImPyImPy-γ-HpPyHpPyImIm
2491)	5'W C C G A G G W-3'	PyPyImPyImIm-γ-PyPyHpPyImIm
2492)	5'W C C G A G C W-3'	PyPyImPyImPy-γ-ImPyHpPyImIm
2493)	5'W C C G A C T W-3'	PyPyImPyPyHp-γ-PyImHpPyImIm
2494)	5'W C C G A C A W-3'	PyPyImPyPyPy-γ-HpImHpPyImIm
2495)	5'W C C G A C G W-3'	PyPyImPyPyIm-γ-PyImHpPyImIm
2496)	5'W C C G A C C W-3'	PyPyImPyPyPy-γ-ImImHpPyImIm

TABLE 125: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCCGSNNW-3'

DNA sequence		aromatic amino acid sequence
2497)	5'W C C G G T T W-3'	PyPyImImHpHp-γ-PyPyPyPyImIm
2498)	5'W C C G G T A W-3'	PyPyImImHpPy-γ-HpPyPyPyImIm
2499)	5'W C C G G T G W-3'	PyPyImImHpIm-γ-PyPyPyPyImIm
2500)	5'W C C G G T C W-3'	PyPyImImHpPy-γ-ImPyPyPyImIm
2501)	5'W C C G G A T W-3'	PyPyImImPyHp-γ-PyHpPyPyImIm
2502)	5'W C C G G A A W-3'	PyPyImImPyPy-γ-HpHpPyPyImIm
2503)	5'W C C G G A G W-3'	PyPyImImPyIm-γ-PyHpPyPyImIm
2504)	5'W C C G G A C W-3'	PyPyImImPyPy-γ-ImHpPyPyImIm
2505)	5'W C C G G G T W-3'	PyPyImImImHp-γ-PyPyPyPyImIm
2506)	5'W C C G G G A W-3'	PyPyImImImPy-γ-HpPyPyPyImIm
2507)	5'W C C G G C T W-3'	PyPyImImPyHp-γ-PyImPyPyImIm
2508)	5'W C C G G C A W-3'	PyPyImImPyPy-γ-HpImPyPyImIm
2509)	5'W C C G C T T W-3'	PyPyImPyHpHp-γ-PyPyImPyImIm
2510)	5'W C C G C T A W-3'	PyPyImPyHpPy-γ-HpPyImPyImIm
2511)	5'W C C G C T G W-3'	PyPyImPyHpIm-γ-PyPyImPyImIm
2512)	5'W C C G C T C W-3'	PyPyImPyHpPy-γ-ImPyImPyImIm
2513)	5'W C C G C A T W-3'	PyPyImPyPyHp-γ-PyHpImPyImIm
2514)	5'W C C G C A A W-3'	PyPyImPyPyPy-γ-HpHpImPyImIm
2515)	5'W C C G C A G W-3'	PyPyImPyPyIm-γ-PyHpImPyImIm
2516)	5'W C C G C A C W-3'	PyPyImPyPyPy-γ-ImHpImPyImIm
2517)	5'W C C G C G T W-3'	PyPyImPyImHp-γ-PyPyImPyImIm
2518)	5'W C C G C G A W-3'	PyPyImPyImPy-γ-HpPyImPyImIm
2519)	5'W C C G C C T W-3'	PyPyImPyPyHp-γ-PyImImPyImIm
2520)	5'W C C G C C A W-3'	PyPyImPyPyPy-γ-HpImImPyImIm
G99)	5'W C C G G G G W-3'	PyPyImImImIm-γ-PyPyPyPyImIm
G100)	5'W C C G G G C W-3'	PyPyImImImPy-γ-ImPyPyPyImIm
G101)	5'W C C G G C G W-3'	PyPyImImPyIm-γ-PyImPyPyImIm
G102)	5'W C C G G C C W-3'	PyPyImImPyPy-γ-ImImPyPyImIm
G103)	5'W C C G C G G W-3'	PyPyImPyImIm-γ-PyPyImPyImIm
G104)	5'W C C G C G C W-3'	PyPyImPyImPy-γ-ImPyImPyImIm
G105)	5'W C C G C C G W-3'	PyPyImPyPyIm-γ-PyImImPyImIm
G106)	5'W C C G C C C W-3'	PyPyImPyPyPy-γ-ImImImPyImIm

TABLE 126: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCCTWNNW-3'

	DNA sequence	aromatic amino acid sequence
5	2521) 5'W C C T T T W-3'	PyPyHpHpHp-γ-PyPyPyPyImIm
	2522) 5'W C C T T T A W-3'	PyPyHpHpHpPy-γ-HpPyPyPyImIm
	2523) 5'W C C T T T G W-3'	PyPyHpHpHpIm-γ-PyPyPyPyImIm
	2524) 5'W C C T T T C W-3'	PyPyHpHpHpPy-γ-ImPyPyPyImIm
	2525) 5'W C C T T A T W-3'	PyPyHpHpPyHp-γ-PyHpPyPyImIm
	2526) 5'W C C T T A A W-3'	PyPyHpHpPyPy-γ-HpHpPyPyImIm
10	2527) 5'W C C T T A G W-3'	PyPyHpHpPyIm-γ-PyHpPyPyImIm
	2528) 5'W C C T T A C W-3'	PyPyHpHpPyPy-γ-ImHpPyPyImIm
	2529) 5'W C C T T G T W-3'	PyPyHpHpImHp-γ-PyPyPyPyImIm
	2530) 5'W C C T T G A W-3'	PyPyHpHpImPy-γ-HpPyPyPyImIm
	2531) 5'W C C T T G G W-3'	PyPyHpHpImIm-γ-PyPyPyPyImIm
	2532) 5'W C C T T G C W-3'	PyPyHpHpImPy-γ-ImPyPyPyImIm
	2533) 5'W C C T T C T W-3'	PyPyHpHpPyHp-γ-PyImPyPyImIm
	2534) 5'W C C T T C A W-3'	PyPyHpHpPyPy-γ-HpImPyPyImIm
	2535) 5'W C C T T C G W-3'	PyPyHpHpPyIm-γ-PyImPyPyImIm
	2536) 5'W C C T T C C W-3'	PyPyHpHpPyPy-γ-ImImPyPyImIm
20	2537) 5'W C C T A T T W-3'	PyPyHpPyHpHp-γ-PyPyHpPyImIm
	2538) 5'W C C T A T A W-3'	PyPyHpPyHpPy-γ-HpPyHpPyImIm
	2539) 5'W C C T A T G W-3'	PyPyHpPyHpIm-γ-PyPyHpPyImIm
	2540) 5'W C C T A T C W-3'	PyPyHpPyHpPy-γ-ImPyHpPyImIm
	2541) 5'W C C T A A T W-3'	PyPyHpPyPyHp-γ-PyHpHpPyImIm
25	2542) 5'W C C T A A A W-3'	PyPyHpPyPyPy-γ-HpHpHpPyImIm
	2543) 5'W C C T A A G W-3'	PyPyHpPyPyIm-γ-PyHpHpPyImIm
	2544) 5'W C C T A A C W-3'	PyPyHpPyPyPy-γ-ImHpHpPyImIm
	2545) 5'W C C T A G T W-3'	PyPyHpPyImHp-γ-PyPyHpPyImIm
	2546) 5'W C C T A G A W-3'	PyPyHpPyImPy-γ-HpPyHpPyImIm
30	2547) 5'W C C T A G G W-3'	PyPyHpPyImIm-γ-PyPyHpPyImIm
	2548) 5'W C C T A G C W-3'	PyPyHpPyImPy-γ-ImPyHpPyImIm
	2549) 5'W C C T A C T W-3'	PyPyHpPyPyHp-γ-PyImHpPyImIm
	2550) 5'W C C T A C A W-3'	PyPyHpPyPyPy-γ-HpImHpPyImIm
	2551) 5'W C C T A C G W-3'	PyPyHpPyPyIm-γ-PyImHpPyImIm
35	2552) 5'W C C T A C C W-3'	PyPyHpPyPyPy-γ-ImImHpPyImIm

TABLE 127: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCCTSNW-3'

	DNA sequence	aromatic amino acid sequence
	2553) 5'W C C T G T T W-3'	PyPyHpImHpHp-γ-PyPyPyPyImIm
5	2554) 5'W C C T G T A W-3'	PyPyHpImHpPy-γ-HpPyPyPyImIm
	2555) 5'W C C T G T G W-3'	PyPyHpImHpIm-γ-PyPyPyPyImIm
	2556) 5'W C C T G T C W-3'	PyPyHpImHpPy-γ-ImPyPyPyImIm
	2557) 5'W C C T G A T W-3'	PyPyHpImPyHp-γ-PyHpPyPyImIm
	2558) 5'W C C T G A A W-3'	PyPyHpImPyPy-γ-HpHpPyPyImIm
10	2559) 5'W C C T G A G W-3'	PyPyHpImPyIm-γ-PyHpPyPyImIm
	2560) 5'W C C T G A C W-3'	PyPyHpImPyPy-γ-ImHpPyPyImIm
	2561) 5'W C C T G G T W-3'	PyPyHpImImHp-γ-PyPyPyPyImIm
	2562) 5'W C C T G G A W-3'	PyPyHpImImPy-γ-HpPyPyPyImIm
	2563) 5'W C C T G C T W-3'	PyPyHpImPyHp-γ-PyImPyPyImIm
	2564) 5'W C C T G C A W-3'	PyPyHpImPyPy-γ-HpImPyPyImIm
	2565) 5'W C C T G G G W-3'	PyPyHpImImIm-γ-PyPyPyPyImIm
	2566) 5'W C C T G G C W-3'	PyPyHpImImPy-γ-ImPyPyPyImIm
	2567) 5'W C C T G C G W-3'	PyPyHpImPyIm-γ-PyImPyPyImIm
	2568) 5'W C C T G C C W-3'	PyPyHpImPyPy-γ-ImImPyPyImIm
20	2569) 5'W C C T C T T W-3'	PyPyHpPyHpHp-γ-PyPyImPyImIm
	2570) 5'W C C T C T A W-3'	PyPyHpPyHpPy-γ-HpPyImPyImIm
	2571) 5'W C C T C T G W-3'	PyPyHpPyHpIm-γ-PyPyImPyImIm
	2572) 5'W C C T C T C W-3'	PyPyHpPyHpPy-γ-ImPyImPyImIm
	2573) 5'W C C T C A T W-3'	PyPyHpPyPyHp-γ-PyHpImPyImIm
25	2574) 5'W C C T C A A W-3'	PyPyHpPyPyPy-γ-HpHpImPyImIm
	2575) 5'W C C T C A G W-3'	PyPyHpPyPyIm-γ-PyHpImPyImIm
	2576) 5'W C C T C A C W-3'	PyPyHpPyPyPy-γ-ImHpImPyImIm
	2577) 5'W C C T C G T W-3'	PyPyHpPyImHp-γ-PyPyImPyImIm
	2578) 5'W C C T C G A W-3'	PyPyHpPyImPy-γ-HpPyImPyImIm
30	2579) 5'W C C T C C T W-3'	PyPyHpPyPyHp-γ-PyImImPyImIm
	2580) 5'W C C T C C A W-3'	PyPyHpPyPyPy-γ-HpImImPyImIm
	2581) 5'W C C T C G G W-3'	PyPyHpPyImIm-γ-PyPyImPyImIm
	2582) 5'W C C T C G C W-3'	PyPyHpPyImPy-γ-ImPyImPyImIm
	2583) 5'W C C T C C G W-3'	PyPyHpPyPyIm-γ-PyImImPyImIm
35	2584) 5'W C C T C C C W-3'	PyPyHpPyPyPy-γ-ImImImPyImIm

TABLE 128: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCCA WNNW-3'

DNA sequence		aromatic amino acid sequence
5	2585) 5'W C C A T T T W-3'	PyPyPyHpHpHp-γ-PyPyPyHpImIm
	2586) 5'W C C A T T A W-3'	PyPyPyHpHpPy-γ-HpPyPyHpImIm
	2587) 5'W C C A T T G W-3'	PyPyPyHpHpIm-γ-PyPyPyHpImIm
	2588) 5'W C C A T T C W-3'	PyPyPyHpHpPy-γ-ImPyPyHpImIm
	2589) 5'W C C A T A T W-3'	PyPyPyHpPyHp-γ-PyHpPyHpImIm
	2590) 5'W C C A T A A W-3'	PyPyPyHpPyPy-γ-HpHpPyHpImIm
10	2591) 5'W C C A T A G W-3'	PyPyPyHpPyIm-γ-PyHpPyHpImIm
	2592) 5'W C C A T A C W-3'	PyPyPyHpPyPy-γ-ImHpPyHpImIm
	2593) 5'W C C A T G T W-3'	PyPyPyHpImHp-γ-PyPyPyHpImIm
	2594) 5'W C C A T G A W-3'	PyPyPyHpImPy-γ-HpPyPyHpImIm
	2595) 5'W C C A T G G W-3'	PyPyPyHpImIm-γ-PyPyPyHpImIm
	2596) 5'W C C A T G C W-3'	PyPyPyHpImPy-γ-ImPyPyHpImIm
	2597) 5'W C C A T C T W-3'	PyPyPyHpPyHp-γ-PyImPyHpImIm
	2598) 5'W C C A T C A W-3'	PyPyPyHpPyPy-γ-HpImPyHpImIm
	2599) 5'W C C A T C G W-3'	PyPyPyHpPyIm-γ-PyImPyHpImIm
	2600) 5'W C C A T C C W-3'	PyPyPyHpPyPy-γ-ImImPyHpImIm
20	2601) 5'W C C A A T T W-3'	PyPyPyPyHpHp-γ-PyPyHpHpImIm
	2602) 5'W C C A A T A W-3'	PyPyPyPyHpPy-γ-HpPyHpHpImIm
	2603) 5'W C C A A T G W-3'	PyPyPyPyHpIm-γ-PyPyHpHpImIm
	2604) 5'W C C A A T C W-3'	PyPyPyPyHpPy-γ-ImPyHpHpImIm
	2605) 5'W C C A A A T W-3'	PyPyPyPyPyHp-γ-PyHpHpHpImIm
25	2606) 5'W C C A A A A W-3'	PyPyPyPyPyPy-γ-HpHpHpHpImIm
	2607) 5'W C C A A A G W-3'	PyPyPyPyPyIm-γ-PyHpHpHpImIm
	2608) 5'W C C A A A C W-3'	PyPyPyPyPyPy-γ-ImHpHpHpImIm
	2609) 5'W C C A A G T W-3'	PyPyPyPyImHp-γ-PyPyHpHpImIm
	2610) 5'W C C A A G A W-3'	PyPyPyPyImPy-γ-HpPyHpHpImIm
30	2611) 5'W C C A A G G W-3'	PyPyPyPyImIm-γ-PyPyHpHpImIm
	2612) 5'W C C A A G C W-3'	PyPyPyPyImPy-γ-ImPyHpHpImIm
	2613) 5'W C C A A C T W-3'	PyPyPyPyPyHp-γ-PyImHpHpImIm
	2614) 5'W C C A A C A W-3'	PyPyPyPyPyPy-γ-HpImHpHpImIm
	2615) 5'W C C A A C G W-3'	PyPyPyPyPyIm-γ-PyImHpHpImIm
35	2616) 5'W C C A A C C W-3'	PyPyPyPyPyPy-γ-ImImHpHpImIm

TABLE 129: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCCASNNW-3'

DNA sequence		aromatic amino acid sequence
5	2617) 5'W C C A G T T W-3'	PyPyPyImHpHp- γ -PyPyPyHpImIm
	2618) 5'W C C A G T A W-3'	PyPyPyImHpPy- γ -HpPyPyHpImIm
	2619) 5'W C C A G T G W-3'	PyPyPyImHpIm- γ -PyPyPyHpImIm
	2620) 5'W C C A G T C W-3'	PyPyPyImHpPy- γ -ImPyPyHpImIm
	2621) 5'W C C A G A T W-3'	PyPyPyImPyHp- γ -PyHpPyHpImIm
	2622) 5'W C C A G A A W-3'	PyPyPyImPyPy- γ -HpHpPyHpImIm
10	2623) 5'W C C A G A G W-3'	PyPyPyImPyIm- γ -PyHpPyHpImIm
	2624) 5'W C C A G A C W-3'	PyPyPyImPyPy- γ -ImHpPyHpImIm
	2625) 5'W C C A G G T W-3'	PyPyPyImImHp- γ -PyPyPyHpImIm
	2626) 5'W C C A G G A W-3'	PyPyPyImImPy- γ -HpPyPyHpImIm
	2627) 5'W C C A G C T W-3'	PyPyPyImPyHp- γ -PyImPyHpImIm
	2628) 5'W C C A G C A W-3'	PyPyPyImPyPy- γ -HpImPyHpImIm
	2629) 5'W C C A G G G W-3'	PyPyPyImImIm- γ -PyPyPyHpImIm
	2630) 5'W C C A G G C W-3'	PyPyPyImImPy- γ -ImPyPyHpImIm
	2631) 5'W C C A G C G W-3'	PyPyPyImPyIm- γ -PyImPyHpImIm
	2632) 5'W C C A G C C W-3'	PyPyPyImPyPy- γ -ImImPyHpImIm
20	2633) 5'W C C A C T T W-3'	PyPyPyPyHpHp- γ -PyPyImHpImIm
	2634) 5'W C C A C T A W-3'	PyPyPyPyHpPy- γ -HpPyImHpImIm
	2635) 5'W C C A C T G W-3'	PyPyPyPyHpIm- γ -PyPyImHpImIm
	2636) 5'W C C A C T C W-3'	PyPyPyPyHpPy- γ -ImPyImHpImIm
	2637) 5'W C C A C A T W-3'	PyPyPyPyPyHp- γ -PyHpImHpImIm
25	2638) 5'W C C A C A A W-3'	PyPyPyPyPyPy- γ -HpHpImHpImIm
	2639) 5'W C C A C A G W-3'	PyPyPyPyPyIm- γ -PyHpImHpImIm
	2640) 5'W C C A C A C W-3'	PyPyPyPyPyPy- γ -ImHpImHpImIm
	2641) 5'W C C A C G T W-3'	PyPyPyPyImHp- γ -PyPyImHpImIm
	2642) 5'W C C A C G A W-3'	PyPyPyPyImPy- γ -HpPyImHpImIm
30	2643) 5'W C C A C C T W-3'	PyPyPyPyPyHp- γ -PyImImHpImIm
	2644) 5'W C C A C C A W-3'	PyPyPyPyPyPy- γ -HpImImHpImIm
	2645) 5'W C C A C G G W-3'	PyPyPyPyImIm- γ -PyPyImHpImIm
	2646) 5'W C C A C G C W-3'	PyPyPyPyImPy- γ -ImPyImHpImIm
	2647) 5'W C C A C C G W-3'	PyPyPyPyPyIm- γ -PyImImHpImIm
35	2648) 5'W C C A C C C W-3'	PyPyPyPyPyPy- γ -ImImImHpImIm

TABLE 130: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCCCWNNW-3'

	DNA sequence	aromatic amino acid sequence
	2649) 5'W C C C T T T W-3'	PyPyPyHpHpHp-γ-PyPyPyImImIm
5	2650) 5'W C C C T T A W-3'	PyPyPyHpHpPy-γ-HpPyPyImImIm
	2651) 5'W C C C T T G W-3'	PyPyPyHpHpIm-γ-PyPyPyImImIm
	2652) 5'W C C C T T C W-3'	PyPyPyHpHpPy-γ-ImPyPyImImIm
	2653) 5'W C C C T A T W-3'	PyPyPyHpPyHp-γ-PyHpPyImImIm
	2654) 5'W C C C T A A W-3'	PyPyPyHpPyPy-γ-HpHpPyImImIm
10	2655) 5'W C C C T A G W-3'	PyPyPyHpPyIm-γ-PyHpPyImImIm
	2656) 5'W C C C T A C W-3'	PyPyPyHpPyPy-γ-ImHpPyImImIm
	2657) 5'W C C C T G T W-3'	PyPyPyHpImHp-γ-PyPyPyImImIm
	2658) 5'W C C C T G A W-3'	PyPyPyHpImPy-γ-HpPyPyImImIm
	2659) 5'W C C C T G G W-3'	PyPyPyHpImIm-γ-PyPyPyImImIm
	2660) 5'W C C C T G C W-3'	PyPyPyHpImPy-γ-ImPyPyImImIm
	2661) 5'W C C C T C T W-3'	PyPyPyHpPyHp-γ-PyImPyImImIm
	2662) 5'W C C C T C A W-3'	PyPyPyHpPyPy-γ-HpImPyImImIm
	2663) 5'W C C C T C G W-3'	PyPyPyHpPyIm-γ-PyImPyImImIm
	2664) 5'W C C C T C C W-3'	PyPyPyHpPyPy-γ-ImImPyImImIm
20	2665) 5'W C C C A T T W-3'	PyPyPyPyHpHp-γ-PyPyHpImImIm
	2666) 5'W C C C A T A W-3'	PyPyPyPyHpPy-γ-HpPyHpImImIm
	2667) 5'W C C C A T G W-3'	PyPyPyPyHpIm-γ-PyPyHpImImIm
	2668) 5'W C C C A T C W-3'	PyPyPyPyHpPy-γ-ImPyHpImImIm
	2669) 5'W C C C A A T W-3'	PyPyPyPyPyHp-γ-PyHpHpImImIm
25	2670) 5'W C C C A A A W-3'	PyPyPyPyPyPy-γ-HpHpHpImImIm
	2671) 5'W C C C A A G W-3'	PyPyPyPyPyIm-γ-PyHpHpImImIm
	2672) 5'W C C C A A C W-3'	PyPyPyPyPyPy-γ-ImHpHpImImIm
	2673) 5'W C C C A G T W-3'	PyPyPyPyImHp-γ-PyPyHpImImIm
	2674) 5'W C C C A G A W-3'	PyPyPyPyImPy-γ-HpPyHpImImIm
30	2675) 5'W C C C A G G W-3'	PyPyPyPyImIm-γ-PyPyHpImImIm
	2676) 5'W C C C A G C W-3'	PyPyPyPyImPy-γ-ImPyHpImImIm
	2677) 5'W C C C A C T W-3'	PyPyPyPyPyHp-γ-PyImHpImImIm
	2678) 5'W C C C A C A W-3'	PyPyPyPyPyPy-γ-HpImHpImImIm
	2679) 5'W C C C A C G W-3'	PyPyPyPyPyIm-γ-PyImHpImImIm
35	2680) 5'W C C C A C C W-3'	PyPyPyPyPyPy-γ-ImImHpImImIm

TABLE 131: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCCCSNNW-3'

	DNA sequence	aromatic amino acid sequence
	2681) 5'W C C C G T T W-3'	PyPyPyImHpHp-γ-PyPyPyImImIm
5	2682) 5'W C C C G T A W-3'	PyPyPyImHpPy-γ-HpPyPyImImIm
	2683) 5'W C C C G T G W-3'	PyPyPyImHpIm-γ-PyPyPyImImIm
	2684) 5'W C C C G T C W-3'	PyPyPyImHpPy-γ-ImPyPyImImIm
	2685) 5'W C C C G A T W-3'	PyPyPyImPyHp-γ-PyHpPyImImIm
	2686) 5'W C C C G A A W-3'	PyPyPyImPyPy-γ-HpHpPyImImIm
10	2687) 5'W C C C G A G W-3'	PyPyPyImPyIm-γ-PyHpPyImImIm
	2688) 5'W C C C G A C W-3'	PyPyPyImPyPy-γ-ImHpPyImImIm
	2689) 5'W C C C G G T W-3'	PyPyPyImImHp-γ-PyPyPyImImIm
	2690) 5'W C C C G G A W-3'	PyPyPyImImPy-γ-HpPyPyImImIm
	2691) 5'W C C C G C T W-3'	PyPyPyImPyHp-γ-PyImPyImImIm
15	2692) 5'W C C C G C A W-3'	PyPyPyImPyPy-γ-HpImPyImImIm
	2693) 5'W C C C C T T W-3'	PyPyPyPyHpHp-γ-PyPyImImImIm
	2694) 5'W C C C C T A W-3'	PyPyPyPyHpPy-γ-HpPyImImImIm
	2695) 5'W C C C C T G W-3'	PyPyPyPyHpIm-γ-PyPyImImImIm
	2696) 5'W C C C C T C W-3'	PyPyPyPyHpPy-γ-ImPyImImImIm
20	2697) 5'W C C C C A T W-3'	PyPyPyPyPyHp-γ-PyHpImImImIm
	2698) 5'W C C C C A A W-3'	PyPyPyPyPyPy-γ-HpHpImImImIm
	2699) 5'W C C C C A G W-3'	PyPyPyPyPyIm-γ-PyHpImImImIm
	2690) 5'W C C C C A C W-3'	PyPyPyPyPyPy-γ-ImHpImImImIm
	2701) 5'W C C C C G T W-3'	PyPyPyPyImHp-γ-PyPyImImImIm
25	2702) 5'W C C C C G A W-3'	PyPyPyPyImPy-γ-HpPyImImImIm
	2703) 5'W C C C C C T W-3'	PyPyPyPyPyHp-γ-PyImImImImIm
	2704) 5'W C C C C C A W-3'	PyPyPyPyPyPy-γ-HpImImImImIm
	G107) 5'W C C C G G G W-3'	PyPyPyImImIm-γ-PyPyPyImImIm
	G108) 5'W C C C G G C W-3'	PyPyPyImImPy-γ-ImPyPyImImIm
30	G109) 5'W C C C G C G W-3'	PyPyPyImPyIm-γ-PyImPyImImIm
	G110) 5'W C C C G C C W-3'	PyPyPyImPyPy-γ-ImImPyImImIm
	G111) 5'W C C C C G G W-3'	PyPyPyPyImIm-γ-PyPyImImImIm
	G112) 5'W C C C C G C W-3'	PyPyPyPyImPy-γ-ImPyImImImIm
	G113) 5'W C C C C C G W-3'	PyPyPyPyPyIm-γ-PyImImImImIm
35	G114) 5'W C C C C C C W-3'	PyPyPyPyPyPy-γ-ImImImImImIm

TABLE 132: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCAGWNNW-3'

DNA sequence		aromatic amino acid sequence
2705)	5'W C A G T T T W-3'	PyPyImHpHpHp-γ-PyPyPyPyHpIm
2706)	5'W C A G T T A W-3'	PyPyImHpHpPy-γ-HpPyPyPyHpIm
2707)	5'W C A G T T G W-3'	PyPyImHpHpIm-γ-PyPyPyPyHpIm
2708)	5'W C A G T T C W-3'	PyPyImHpHpPy-γ-ImPyPyPyHpIm
2709)	5'W C A G T A T W-3'	PyPyImHpPyHp-γ-PyHpPyPyHpIm
2700)	5'W C A G T A A W-3'	PyPyImHpPyPy-γ-HpHpPyPyHpIm
2711)	5'W C A G T A G W-3'	PyPyImHpPyIm-γ-PyHpPyPyHpIm
2712)	5'W C A G T A C W-3'	PyPyImHpPyPy-γ-ImHpPyPyHpIm
2713)	5'W C A G T G T W-3'	PyPyImHpImHp-γ-PyPyPyPyHpIm
2714)	5'W C A G T G A W-3'	PyPyImHpImPy-γ-HpPyPyPyHpIm
2715)	5'W C A G T G G W-3'	PyPyImHpImIm-γ-PyPyPyPyHpIm
2716)	5'W C A G T G C W-3'	PyPyImHpImPy-γ-ImPyPyPyHpIm
2717)	5'W C A G T C T W-3'	PyPyImHpPyHp-γ-PyImPyPyHpIm
2718)	5'W C A G T C A W-3'	PyPyImHpPyPy-γ-HpImPyPyHpIm
2719)	5'W C A G T C G W-3'	PyPyImHpPyIm-γ-PyImPyPyHpIm
2720)	5'W C A G T C C W-3'	PyPyImHpPyPy-γ-ImImPyPyHpIm
2721)	5'W C A G A T T W-3'	PyPyImPyHpHp-γ-PyPyHpPyHpIm
2722)	5'W C A G A T A W-3'	PyPyImPyHpPy-γ-HpPyHpPyHpIm
2723)	5'W C A G A T G W-3'	PyPyImPyHpIm-γ-PyPyHpPyHpIm
2724)	5'W C A G A T C W-3'	PyPyImPyHpPy-γ-ImPyHpPyHpIm
2725)	5'W C A G A A T W-3'	PyPyImPyPyHp-γ-PyHpHpPyHpIm
2726)	5'W C A G A A A W-3'	PyPyImPyPyPy-γ-HpHpHpPyHpIm
2727)	5'W C A G A A G W-3'	PyPyImPyPyIm-γ-PyHpHpPyHpIm
2728)	5'W C A G A A C W-3'	PyPyImPyPyPy-γ-ImHpHpPyHpIm
2729)	5'W C A G A G T W-3'	PyPyImPyImHp-γ-PyPyHpPyHpIm
2730)	5'W C A G A G A W-3'	PyPyImPyImPy-γ-HpPyHpPyHpIm
2731)	5'W C A G A G G W-3'	PyPyImPyImIm-γ-PyPyHpPyHpIm
2732)	5'W C A G A G C W-3'	PyPyImPyImPy-γ-ImPyHpPyHpIm
2733)	5'W C A G A C T W-3'	PyPyImPyPyHp-γ-PyImHpPyHpIm
2734)	5'W C A G A C A W-3'	PyPyImPyPyPy-γ-HpImHpPyHpIm
2735)	5'W C A G A C G W-3'	PyPyImPyPyIm-γ-PyImHpPyHpIm
2736)	5'W C A G A C C W-3'	PyPyImPyPyPy-γ-ImImHpPyHpIm

TABLE 133: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCAGSNNW-3'

	DNA sequence	aromatic amino acid sequence
	2737) 5'W C A G G T T W-3'	PyPyImImHpHp-γ-PyPyPyPyHpIm
5	2738) 5'W C A G G T A W-3'	PyPyImImHpPy-γ-HpPyPyPyHpIm
	2739) 5'W C A G G T G W-3'	PyPyImImHpIm-γ-PyPyPyPyHpIm
	2740) 5'W C A G G T C W-3'	PyPyImImHpPy-γ-ImPyPyPyHpIm
	2741) 5'W C A G G A T W-3'	PyPyImImPyHp-γ-PyHpPyPyHpIm
	2742) 5'W C A G G A A W-3'	PyPyImImPyPy-γ-HpHpPyPyHpIm
10	2743) 5'W C A G G A G W-3'	PyPyImImPyIm-γ-PyHpPyPyHpIm
	2744) 5'W C A G G A C W-3'	PyPyImImPyPy-γ-ImHpPyPyHpIm
	2745) 5'W C A G G G T W-3'	PyPyImImImHp-γ-PyPyPyPyHpIm
	2746) 5'W C A G G G A W-3'	PyPyImImImPy-γ-HpPyPyPyHpIm
	2747) 5'W C A G G C T W-3'	PyPyImImPyHp-γ-PyImPyPyHpIm
	2748) 5'W C A G G C A W-3'	PyPyImImPyPy-γ-HpImPyPyHpIm
	2749) 5'W C A G C T T W-3'	PyPyImPyHpHp-γ-PyPyImPyHpIm
	2750) 5'W C A G C T A W-3'	PyPyImPyHpPy-γ-HpPyImPyHpIm
	2751) 5'W C A G C T G W-3'	PyPyImPyHpIm-γ-PyPyImPyHpIm
	2752) 5'W C A G C T C W-3'	PyPyImPyHpPy-γ-ImPyImPyHpIm
20	2753) 5'W C A G C A T W-3'	PyPyImPyPyHp-γ-PyHpImPyHpIm
	2754) 5'W C A G C A A W-3'	PyPyImPyPyPy-γ-HpHpImPyHpIm
	2755) 5'W C A G C A G W-3'	PyPyImPyPyIm-γ-PyHpImPyHpIm
	2756) 5'W C A G C A C W-3'	PyPyImPyPyPy-γ-ImHpImPyHpIm
	2757) 5'W C A G C G T W-3'	PyPyImPyImHp-γ-PyPyImPyHpIm
25	2758) 5'W C A G C G A W-3'	PyPyImPyImPy-γ-HpPyImPyHpIm
	2759) 5'W C A G C C T W-3'	PyPyImPyPyHp-γ-PyImImPyHpIm
	2760) 5'W C A G C C A W-3'	PyPyImPyPyPy-γ-HpImImPyHpIm
	2761) 5'W C A G G G G W-3'	PyPyImImImIm-γ-PyPyPyPyHpIm
	2762) 5'W C A G G G C W-3'	PyPyImImImPy-γ-ImPyPyPyHpIm
30	2763) 5'W C A G G C G W-3'	PyPyImImPyIm-γ-PyImPyPyHpIm
	2764) 5'W C A G G C C W-3'	PyPyImImPyPy-γ-ImImPyPyHpIm
	2765) 5'W C A G C G G W-3'	PyPyImPyImIm-γ-PyPyImPyHpIm
	2766) 5'W C A G C G C W-3'	PyPyImPyImPy-γ-ImPyImPyHpIm
	2767) 5'W C A G C C G W-3'	PyPyImPyPyIm-γ-PyImImPyHpIm
35	2768) 5'W C A G C C C W-3'	PyPyImPyPyPy-γ-ImImImPyHpIm

TABLE 134: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCATWNNW-3'

	DNA sequence	aromatic amino acid sequence
	2769) 5'W C A T T T T W-3'	PyPyHpHpHpHp-γ-PyPyPyPyHpIm
5	2770) 5'W C A T T T A W-3'	PyPyHpHpHpPy-γ-HpPyPyPyHpIm
	2771) 5'W C A T T T G W-3'	PyPyHpHpHpIm-γ-PyPyPyPyHpIm
	2772) 5'W C A T T T C W-3'	PyPyHpHpHpPy-γ-ImPyPyPyHpIm
	2773) 5'W C A T T A T W-3'	PyPyHpHpPyHp-γ-PyHpPyPyHpIm
	2774) 5'W C A T T A A W-3'	PyPyHpHpPyPy-γ-HpHpPyPyHpIm
10	2775) 5'W C A T T A G W-3'	PyPyHpHpPyIm-γ-PyHpPyPyHpIm
	2776) 5'W C A T T A C W-3'	PyPyHpHpPyPy-γ-ImHpPyPyHpIm
	2777) 5'W C A T T G T W-3'	PyPyHpHpImHp-γ-PyPyPyPyHpIm
	2778) 5'W C A T T G A W-3'	PyPyHpHpImPy-γ-HpPyPyPyHpIm
	2779) 5'W C A T T G G W-3'	PyPyHpHpImIm-γ-PyPyPyPyHpIm
	2780) 5'W C A T T G C W-3'	PyPyHpHpImPy-γ-ImPyPyPyHpIm
	2781) 5'W C A T T C T W-3'	PyPyHpHpPyHp-γ-PyImPyPyHpIm
	2782) 5'W C A T T C A W-3'	PyPyHpHpPyPy-γ-HpImPyPyHpIm
	2783) 5'W C A T T C G W-3'	PyPyHpHpPyIm-γ-PyImPyPyHpIm
	2784) 5'W C A T T C C W-3'	PyPyHpHpPyPy-γ-ImImPyPyHpIm
20	2785) 5'W C A T A T T W-3'	PyPyHpPyHpHp-γ-PyPyHpPyHpIm
	2786) 5'W C A T A T A W-3'	PyPyHpPyHpPy-γ-HpPyHpPyHpIm
	2787) 5'W C A T A T G W-3'	PyPyHpPyHpIm-γ-PyPyHpPyHpIm
	2788) 5'W C A T A T C W-3'	PyPyHpPyHpPy-γ-ImPyHpPyHpIm
	2789) 5'W C A T A A T W-3'	PyPyHpPyPyHp-γ-PyHpHpPyHpIm
25	2790) 5'W C A T A A A W-3'	PyPyHpPyPyPy-γ-HpHpHpPyHpIm
	2791) 5'W C A T A A G W-3'	PyPyHpPyPyIm-γ-PyHpHpPyHpIm
	2792) 5'W C A T A A C W-3'	PyPyHpPyPyPy-γ-ImHpHpPyHpIm
	2793) 5'W C A T A G T W-3'	PyPyHpPyImHp-γ-PyPyHpPyHpIm
	2794) 5'W C A T A G A W-3'	PyPyHpPyImPy-γ-HpPyHpPyHpIm
30	2795) 5'W C A T A G G W-3'	PyPyHpPyImIm-γ-PyPyHpPyHpIm
	2796) 5'W C A T A G C W-3'	PyPyHpPyImPy-γ-ImPyHpPyHpIm
	2797) 5'W C A T A C T W-3'	PyPyHpPyPyHp-γ-PyImHpPyHpIm
	2798) 5'W C A T A C A W-3'	PyPyHpPyPyPy-γ-HpImHpPyHpIm
	2799) 5'W C A T A C G W-3'	PyPyHpPyPyIm-γ-PyImHpPyHpIm
35	2800) 5'W C A T A C C W-3'	PyPyHpPyPyPy-γ-ImImHpPyHpIm

TABLE 135: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCATSNW-3'

	DNA sequence	aromatic amino acid sequence
	2801) 5'W C A T G T T W-3'	PyPyHpImHpHp- γ -PyPyPyPyHpIm
5	2802) 5'W C A T G T A W-3'	PyPyHpImHpPy- γ -HpPyPyPyHpIm
	2803) 5'W C A T G T G W-3'	PyPyHpImHpIm- γ -PyPyPyPyHpIm
	2804) 5'W C A T G T C W-3'	PyPyHpImHpPy- γ -ImPyPyPyHpIm
	2805) 5'W C A T G A T W-3'	PyPyHpImPyHp- γ -PyHpPyPyHpIm
	2806) 5'W C A T G A A W-3'	PyPyHpImPyPy- γ -HpHpPyPyHpIm
10	2807) 5'W C A T G A G W-3'	PyPyHpImPyIm- γ -PyHpPyPyHpIm
	2808) 5'W C A T G A C W-3'	PyPyHpImPyPy- γ -ImHpPyPyHpIm
	2809) 5'W C A T G G T W-3'	PyPyHpImImHp- γ -PyPyPyPyHpIm
	2810) 5'W C A T G G A W-3'	PyPyHpImImPy- γ -HpPyPyPyHpIm
	2811) 5'W C A T G C T W-3'	PyPyHpImPyHp- γ -PyImPyPyHpIm
15	2812) 5'W C A T G C A W-3'	PyPyHpImPyPy- γ -HpImPyPyHpIm
	2813) 5'W C A T G G G W-3'	PyPyHpImImIm- γ -PyPyPyPyHpIm
	2814) 5'W C A T G G C W-3'	PyPyHpImImPy- γ -ImPyPyPyHpIm
	2815) 5'W C A T G C G W-3'	PyPyHpImPyIm- γ -PyImPyPyHpIm
	2816) 5'W C A T G C C W-3'	PyPyHpImPyPy- γ -ImImPyPyHpIm
20	2817) 5'W C A T C T T W-3'	PyPyHpPyHpHp- γ -PyPyImPyHpIm
	2818) 5'W C A T C T A W-3'	PyPyHpPyHpPy- γ -HpPyImPyHpIm
	2819) 5'W C A T C T G W-3'	PyPyHpPyHpIm- γ -PyPyImPyHpIm
	2820) 5'W C A T C T C W-3'	PyPyHpPyHpPy- γ -ImPyImPyHpIm
	2821) 5'W C A T C A T W-3'	PyPyHpPyPyHp- γ -PyHpImPyHpIm
25	2822) 5'W C A T C A A W-3'	PyPyHpPyPyPy- γ -HpHpImPyHpIm
	2823) 5'W C A T C A G W-3'	PyPyHpPyPyIm- γ -PyHpImPyHpIm
	2824) 5'W C A T C A C W-3'	PyPyHpPyPyPy- γ -ImHpImPyHpIm
	2825) 5'W C A T C G T W-3'	PyPyHpPyImHp- γ -PyPyImPyHpIm
	2826) 5'W C A T C G A W-3'	PyPyHpPyImPy- γ -HpPyImPyHpIm
30	2827) 5'W C A T C C T W-3'	PyPyHpPyPyHp- γ -PyImImPyHpIm
	2828) 5'W C A T C C A W-3'	PyPyHpPyPyPy- γ -HpImImPyHpIm
	2829) 5'W C A T C G G W-3'	PyPyHpPyImIm- γ -PyPyImPyHpIm
	2830) 5'W C A T C G C W-3'	PyPyHpPyImPy- γ -ImPyImPyHpIm
	2831) 5'W C A T C C G W-3'	PyPyHpPyPyIm- γ -PyImImPyHpIm
35	2832) 5'W C A T C C C W-3'	PyPyHpPyPyPy- γ -ImImImPyHpIm

TABLE 136: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCAAWNNW-3'

	DNA sequence	aromatic amino acid sequence
	2833) 5'W C A A T T T W-3'	PyPyPyHpHpHp- γ -PyPyPyHpHpIm
5	2834) 5'W C A A T T A W-3'	PyPyPyHpHpPy- γ -HpPyPyHpHpIm
	2835) 5'W C A A T T G W-3'	PyPyPyHpHpIm- γ -PyPyPyHpHpIm
	2836) 5'W C A A T T C W-3'	PyPyPyHpHpPy- γ -ImPyPyHpHpIm
	2837) 5'W C A A T A T W-3'	PyPyPyHpPyHp- γ -PyHpPyHpHpIm
	2838) 5'W C A A T A A W-3'	PyPyPyHpPyPy- γ -HpHpPyHpHpIm
10	2839) 5'W C A A T A G W-3'	PyPyPyHpPyIm- γ -PyHpPyHpHpIm
	2840) 5'W C A A T A C W-3'	PyPyPyHpPyPy- γ -ImHpPyHpHpIm
	2841) 5'W C A A T G T W-3'	PyPyPyHpImHp- γ -PyPyPyHpHpIm
	2842) 5'W C A A T G A W-3'	PyPyPyHpImPy- γ -HpPyPyHpHpIm
	2843) 5'W C A A T G G W-3'	PyPyPyHpImIm- γ -PyPyPyHpHpIm
	2844) 5'W C A A T G C W-3'	PyPyPyHpImPy- γ -ImPyPyHpHpIm
	2845) 5'W C A A T C T W-3'	PyPyPyHpPyHp- γ -PyImPyHpHpIm
	2846) 5'W C A A T C A W-3'	PyPyPyHpPyPy- γ -HpImPyHpHpIm
	2847) 5'W C A A T C G W-3'	PyPyPyHpPyIm- γ -PyImPyHpHpIm
	2848) 5'W C A A T C C W-3'	PyPyPyHpPyPy- γ -ImImPyHpHpIm
20	2849) 5'W C A A A T T W-3'	PyPyPyPyHpHp- γ -PyPyHpHpHpIm
	2850) 5'W C A A A T A W-3'	PyPyPyPyHpPy- γ -HpPyHpHpHpIm
	2851) 5'W C A A A T G W-3'	PyPyPyPyHpIm- γ -PyPyHpHpHpIm
	2852) 5'W C A A A T C W-3'	PyPyPyPyHpPy- γ -ImPyHpHpHpIm
	2853) 5'W C A A A A T W-3'	PyPyPyPyPyHp- γ -PyHpHpHpHpIm
25	2854) 5'W C A A A A A W-3'	PyPyPyPyPyPy- γ -HpHpHpHpHpIm
	2855) 5'W C A A A A G W-3'	PyPyPyPyPyIm- γ -PyHpHpHpHpIm
	2856) 5'W C A A A A C W-3'	PyPyPyPyPyPy- γ -ImHpHpHpHpIm
	2857) 5'W C A A A G T W-3'	PyPyPyPyImHp- γ -PyPyHpHpHpIm
	2858) 5'W C A A A G A W-3'	PyPyPyPyImPy- γ -HpPyHpHpHpIm
30	2859) 5'W C A A A G G W-3'	PyPyPyPyImIm- γ -PyPyHpHpHpIm
	2860) 5'W C A A A G C W-3'	PyPyPyPyImPy- γ -ImPyHpHpHpIm
	2861) 5'W C A A A C T W-3'	PyPyPyPyPyHp- γ -PyImHpHpHpIm
	2862) 5'W C A A A C A W-3'	PyPyPyPyPyPy- γ -HpImHpHpHpIm
	2863) 5'W C A A A C G W-3'	PyPyPyPyPyIm- γ -PyImHpHpHpIm
35	2864) 5'W C A A A C C W-3'	PyPyPyPyPyPy- γ -ImImHpHpHpIm

TABLE 137: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCAASNNW-3'

	DNA sequence	aromatic amino acid sequence
	2865) 5'W C A A G T T W-3'	PyPyPyImHpHp-γ-PyPyPyHpHpIm
5	2866) 5'W C A A G T A W-3'	PyPyPyImHpPy-γ-HpPyPyHpHpIm
	2867) 5'W C A A G T G W-3'	PyPyPyImHpIm-γ-PyPyPyHpHpIm
	2868) 5'W C A A G T C W-3'	PyPyPyImHpPy-γ-ImPyPyHpHpIm
	2869) 5'W C A A G A T W-3'	PyPyPyImPyHp-γ-PyHpPyHpHpIm
	2870) 5'W C A A G A A W-3'	PyPyPyImPyPy-γ-HpHpPyHpHpIm
10	2871) 5'W C A A G A G W-3'	PyPyPyImPyIm-γ-PyHpPyHpHpIm
	2872) 5'W C A A G A C W-3'	PyPyPyImPyPy-γ-ImHpPyHpHpIm
	2873) 5'W C A A G G T W-3'	PyPyPyImImHp-γ-PyPyPyHpHpIm
	2874) 5'W C A A G G A W-3'	PyPyPyImImPy-γ-HpPyPyHpHpIm
	2875) 5'W C A A G C T W-3'	PyPyPyImPyHp-γ-PyImPyHpHpIm
	2876) 5'W C A A G C A W-3'	PyPyPyImPyPy-γ-HpImPyHpHpIm
	2877) 5'W C A A G G G W-3'	PyPyPyImImIm-γ-PyPyPyHpHpIm
	2878) 5'W C A A G G C W-3'	PyPyPyImImPy-γ-ImPyPyHpHpIm
	2879) 5'W C A A G C G W-3'	PyPyPyImPyIm-γ-PyImPyHpHpIm
	2880) 5'W C A A G C C W-3'	PyPyPyImPyPy-γ-ImImPyHpHpIm
20	2881) 5'W C A A C T T W-3'	PyPyPyPyHpHp-γ-PyPyImHpHpIm
	2882) 5'W C A A C T A W-3'	PyPyPyPyHpPy-γ-HpPyImHpHpIm
	2883) 5'W C A A C T G W-3'	PyPyPyPyHpIm-γ-PyPyImHpHpIm
	2884) 5'W C A A C T C W-3'	PyPyPyPyHpPy-γ-ImPyImHpHpIm
	2885) 5'W C A A C A T W-3'	PyPyPyPyPyHp-γ-PyHpImHpHpIm
25	2886) 5'W C A A C A A W-3'	PyPyPyPyPyPy-γ-HpHpImHpHpIm
	2887) 5'W C A A C A G W-3'	PyPyPyPyPyIm-γ-PyHpImHpHpIm
	2888) 5'W C A A C A C W-3'	PyPyPyPyPyPy-γ-ImHpImHpHpIm
	2889) 5'W C A A C G T W-3'	PyPyPyPyImHp-γ-PyPyImHpHpIm
	2890) 5'W C A A C G A W-3'	PyPyPyPyImPy-γ-HpPyImHpHpIm
30	2891) 5'W C A A C C T W-3'	PyPyPyPyPyHp-γ-PyImImHpHpIm
	2892) 5'W C A A C C A W-3'	PyPyPyPyPyPy-γ-HpImImHpHpIm
	2893) 5'W C A A C G G W-3'	PyPyPyPyImIm-γ-PyPyImHpHpIm
	2894) 5'W C A A C G C W-3'	PyPyPyPyImPy-γ-ImPyImHpHpIm
	2895) 5'W C A A C C G W-3'	PyPyPyPyPyIm-γ-PyImImHpHpIm
35	2896) 5'W C A A C C C W-3'	PyPyPyPyPyPy-γ-ImImImHpHpIm

TABLE 138: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCACWNNW-3'

DNA sequence		aromatic amino acid sequence
5	2897) 5'W C A C T T T W-3'	PyPyPyHpHpHp-γ-PyPyPyImHpIm
	2898) 5'W C A C T T A W-3'	PyPyPyHpHpPy-γ-HpPyPyImHpIm
	2899) 5'W C A C T T G W-3'	PyPyPyHpHpIm-γ-PyPyPyImHpIm
	2900) 5'W C A C T T C W-3'	PyPyPyHpHpPy-γ-ImPyPyImHpIm
	2901) 5'W C A C T A T W-3'	PyPyPyHpPyHp-γ-PyHpPyImHpIm
	2902) 5'W C A C T A A W-3'	PyPyPyHpPyPy-γ-HpHpPyImHpIm
10	2903) 5'W C A C T A G W-3'	PyPyPyHpPyIm-γ-PyHpPyImHpIm
	2904) 5'W C A C T A C W-3'	PyPyPyHpPyPy-γ-ImHpPyImHpIm
	2905) 5'W C A C T G T W-3'	PyPyPyHpImHp-γ-PyPyPyImHpIm
	2906) 5'W C A C T G A W-3'	PyPyPyHpImPy-γ-HpPyPyImHpIm
	2907) 5'W C A C T G G W-3'	PyPyPyHpImIm-γ-PyPyPyImHpIm
	2908) 5'W C A C T G C W-3'	PyPyPyHpImPy-γ-ImPyPyImHpIm
	2909) 5'W C A C T C T W-3'	PyPyPyHpPyHp-γ-PyImPyImHpIm
	2910) 5'W C A C T C A W-3'	PyPyPyHpPyPy-γ-HpImPyImHpIm
	2911) 5'W C A C T C G W-3'	PyPyPyHpPyIm-γ-PyImPyImHpIm
	2912) 5'W C A C T C C W-3'	PyPyPyHpPyPy-γ-ImImPyImHpIm
20	2913) 5'W C A C A T T W-3'	PyPyPyPyHpHp-γ-PyPyHpImHpIm
	2914) 5'W C A C A T A W-3'	PyPyPyPyHpPy-γ-HpPyHpImHpIm
	2915) 5'W C A C A T G W-3'	PyPyPyPyHpIm-γ-PyPyHpImHpIm
	2916) 5'W C A C A T C W-3'	PyPyPyPyHpPy-γ-ImPyHpImHpIm
	2917) 5'W C A C A A T W-3'	PyPyPyPyPyHp-γ-PyHpHpImHpIm
25	2918) 5'W C A C A A A W-3'	PyPyPyPyPyPy-γ-HpHpHpImHpIm
	2919) 5'W C A C A A G W-3'	PyPyPyPyPyIm-γ-PyHpHpImHpIm
	2920) 5'W C A C A A C W-3'	PyPyPyPyPyPy-γ-ImHpHpImHpIm
	2921) 5'W C A C A G T W-3'	PyPyPyPyImHp-γ-PyPyHpImHpIm
	2922) 5'W C A C A G A W-3'	PyPyPyPyImPy-γ-HpPyHpImHpIm
30	2923) 5'W C A C A G G W-3'	PyPyPyPyImIm-γ-PyPyHpImHpIm
	2924) 5'W C A C A G C W-3'	PyPyPyPyImPy-γ-ImPyHpImHpIm
	2925) 5'W C A C A C T W-3'	PyPyPyPyPyHp-γ-PyImHpImHpIm
	2926) 5'W C A C A C A W-3'	PyPyPyPyPyPy-γ-HpImHpImHpIm
	2927) 5'W C A C A C G W-3'	PyPyPyPyPyIm-γ-PyImHpImHpIm
35	2928) 5'W C A C A C C W-3'	PyPyPyPyPyPy-γ-ImImHpImHpIm

TABLE 139: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCACSNNW-3'

DNA sequence		aromatic amino acid sequence
5	2929) 5'W C A C G T T W-3'	PyPyPyImHpHp-γ-PyPyPyImHpIm
	2930) 5'W C A C G T A W-3'	PyPyPyImHpPy-γ-HpPyPyImHpIm
	2931) 5'W C A C G T G W-3'	PyPyPyImHpIm-γ-PyPyPyImHpIm
	2932) 5'W C A C G T C W-3'	PyPyPyImHpPy-γ-ImPyPyImHpIm
	2933) 5'W C A C G A T W-3'	PyPyPyImPyHp-γ-PyHpPyImHpIm
	2934) 5'W C A C G A A W-3'	PyPyPyImPyPy-γ-HpHpPyImHpIm
10	2935) 5'W C A C G A G W-3'	PyPyPyImPyIm-γ-PyHpPyImHpIm
	2936) 5'W C A C G A C W-3'	PyPyPyImPyPy-γ-ImHpPyImHpIm
	2937) 5'W C A C G G T W-3'	PyPyPyImImHp-γ-PyPyPyImHpIm
	2938) 5'W C A C G G A W-3'	PyPyPyImImPy-γ-HpPyPyImHpIm
	2939) 5'W C A C G C T W-3'	PyPyPyImPyHp-γ-PyImPyImHpIm
	2940) 5'W C A C G C A W-3'	PyPyPyImPyPy-γ-HpImPyImHpIm
	2941) 5'W C A C C T T W-3'	PyPyPyPyHpHp-γ-PyPyImImHpIm
	2942) 5'W C A C C T A W-3'	PyPyPyPyHpPy-γ-HpPyImImHpIm
	2943) 5'W C A C C T G W-3'	PyPyPyPyHpIm-γ-PyPyImImHpIm
	2944) 5'W C A C C T C W-3'	PyPyPyPyHpPy-γ-ImPyImImHpIm
20	2945) 5'W C A C C A T W-3'	PyPyPyPyPyHp-γ-PyHpImImHpIm
	2946) 5'W C A C C A A W-3'	PyPyPyPyPyPy-γ-HpHpImImHpIm
	2947) 5'W C A C C A G W-3'	PyPyPyPyPyIm-γ-PyHpImImHpIm
	2948) 5'W C A C C A C W-3'	PyPyPyPyPyPy-γ-ImHpImImHpIm
	2949) 5'W C A C C G T W-3'	PyPyPyPyImHp-γ-PyPyImImHpIm
25	2950) 5'W C A C C G A W-3'	PyPyPyPyImPy-γ-HpPyImImHpIm
	2951) 5'W C A C C C T W-3'	PyPyPyPyPyHp-γ-PyImImImHpIm
	2952) 5'W C A C C C A W-3'	PyPyPyPyPyPy-γ-HpImImImHpIm
	2953) 5'W C A C G G G W-3'	PyPyPyImImIm-γ-PyPyPyImHpIm
	2954) 5'W C A C G G C W-3'	PyPyPyImImPy-γ-ImPyPyImHpIm
30	2955) 5'W C A C G C G W-3'	PyPyPyImPyIm-γ-PyImPyImHpIm
	2956) 5'W C A C G C C W-3'	PyPyPyImPyPy-γ-ImImPyImHpIm
	2957) 5'W C A C C G G W-3'	PyPyPyPyImIm-γ-PyPyImImHpIm
	2958) 5'W C A C C G C W-3'	PyPyPyPyImPy-γ-ImPyImImHpIm
	2959) 5'W C A C C C G W-3'	PyPyPyPyPyIm-γ-PyImImImHpIm
35	2960) 5'W C A C C C C W-3'	PyPyPyPyPyPy-γ-ImImImImHpIm

TABLE 140: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCTGWNNW-3'

	DNA sequence	aromatic amino acid sequence
	2961) 5'W C T G T T T W-3'	PyHpImHpHpHp-γ-PyPyPyPyPyIm
5	2962) 5'W C T G T T A W-3'	PyHpImHpHpPy-γ-HpPyPyPyPyIm
	2963) 5'W C T G T T G W-3'	PyHpImHpHpIm-γ-PyPyPyPyPyIm
	2964) 5'W C T G T T C W-3'	PyHpImHpHpPy-γ-ImPyPyPyPyIm
	2965) 5'W C T G T A T W-3'	PyHpImHpPyHp-γ-PyHpPyPyPyIm
	2966) 5'W C T G T A A W-3'	PyHpImHpPyPy-γ-HpHpPyPyPyIm
10	2967) 5'W C T G T A G W-3'	PyHpImHpPyIm-γ-PyHpPyPyPyIm
	2968) 5'W C T G T A C W-3'	PyHpImHpPyPy-γ-ImHpPyPyPyIm
	2969) 5'W C T G T G T W-3'	PyHpImHpImHp-γ-PyPyPyPyPyIm
	2970) 5'W C T G T G A W-3'	PyHpImHpImPy-γ-HpPyPyPyPyIm
	2971) 5'W C T G T G G W-3'	PyHpImHpImIm-γ-PyPyPyPyPyIm
15	2972) 5'W C T G T G C W-3'	PyHpImHpImPy-γ-ImPyPyPyPyIm
	2973) 5'W C T G T C T W-3'	PyHpImHpPyHp-γ-PyImPyPyPyIm
	2974) 5'W C T G T C A W-3'	PyHpImHpPyPy-γ-HpImPyPyPyIm
	2975) 5'W C T G T C G W-3'	PyHpImHpPyIm-γ-PyImPyPyPyIm
	2976) 5'W C T G T C C W-3'	PyHpImHpPyPy-γ-ImImPyPyPyIm
20	2977) 5'W C T G A T T W-3'	PyHpImPyHpHp-γ-PyPyHpPyPyIm
	2978) 5'W C T G A T A W-3'	PyHpImPyHpPy-γ-HpPyHpPyPyIm
	2979) 5'W C T G A T G W-3'	PyHpImPyHpIm-γ-PyPyHpPyPyIm
	2980) 5'W C T G A T C W-3'	PyHpImPyHpPy-γ-ImPyHpPyPyIm
	2981) 5'W C T G A A T W-3'	PyHpImPyPyHp-γ-PyHpHpPyPyIm
25	2982) 5'W C T G A A A W-3'	PyHpImPyPyPy-γ-HpHpHpPyPyIm
	2983) 5'W C T G A A G W-3'	PyHpImPyPyIm-γ-PyHpHpPyPyIm
	2984) 5'W C T G A A C W-3'	PyHpImPyPyPy-γ-ImHpHpPyPyIm
	2985) 5'W C T G A G T W-3'	PyHpImPyImHp-γ-PyPyHpPyPyIm
	2986) 5'W C T G A G A W-3'	PyHpImPyImPy-γ-HpPyHpPyPyIm
30	2987) 5'W C T G A G G W-3'	PyHpImPyImIm-γ-PyPyHpPyPyIm
	2988) 5'W C T G A G C W-3'	PyHpImPyImPy-γ-ImPyHpPyPyIm
	2989) 5'W C T G A C T W-3'	PyHpImPyPyHp-γ-PyImHpPyPyIm
	2990) 5'W C T G A C A W-3'	PyHpImPyPyPy-γ-HpImHpPyPyIm
	2991) 5'W C T G A C G W-3'	PyHpImPyPyIm-γ-PyImHpPyPyIm
35	2992) 5'W C T G A C C W-3'	PyHpImPyPyPy-γ-ImImHpPyPyIm

TABLE 141: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCTGSNNW-3'

	DNA sequence	aromatic amino acid sequence
	2993) 5'W C T G G T T W-3'	PyHpImImHpHp-γ-PyPyPyPyPyIm
5	2994) 5'W C T G G T A W-3'	PyHpImImHpPy-γ-HpPyPyPyPyIm
	2995) 5'W C T G G T G W-3'	PyHpImImHpIm-γ-PyPyPyPyPyIm
	2996) 5'W C T G G T C W-3'	PyHpImImHpPy-γ-ImPyPyPyPyIm
	2997) 5'W C T G G A T W-3'	PyHpImImPyHp-γ-PyHpPyPyPyIm
	2998) 5'W C T G G A A W-3'	PyHpImImPyPy-γ-HpHpPyPyPyIm
10	2999) 5'W C T G G A G W-3'	PyHpImImPyIm-γ-PyHpPyPyPyIm
	3000) 5'W C T G G A C W-3'	PyHpImImPyPy-γ-ImHpPyPyPyIm
	3001) 5'W C T G G G T W-3'	PyHpImImImHp-γ-PyPyPyPyPyIm
	3002) 5'W C T G G G A W-3'	PyHpImImImPy-γ-HpPyPyPyPyIm
	3003) 5'W C T G G C T W-3'	PyHpImImPyHp-γ-PyImPyPyPyIm
	3004) 5'W C T G G C A W-3'	PyHpImImPyPy-γ-HpImPyPyPyIm
	3005) 5'W C T G C T T W-3'	PyHpImPyHpHp-γ-PyPyImPyPyIm
	3006) 5'W C T G C T A W-3'	PyHpImPyHpPy-γ-HpPyImPyPyIm
	3007) 5'W C T G C T G W-3'	PyHpImPyHpIm-γ-PyPyImPyPyIm
	3008) 5'W C T G C T C W-3'	PyHpImPyHpPy-γ-ImPyImPyPyIm
20	3009) 5'W C T G C A T W-3'	PyHpImPyPyHp-γ-PyHpImPyPyIm
	3010) 5'W C T G C A A W-3'	PyHpImPyPyPy-γ-HpHpImPyPyIm
	3011) 5'W C T G C A G W-3'	PyHpImPyPyIm-γ-PyHpImPyPyIm
	3012) 5'W C T G C A C W-3'	PyHpImPyPyPy-γ-ImHpImPyPyIm
	3013) 5'W C T G C G T W-3'	PyHpImPyImHp-γ-PyPyImPyPyIm
25	3014) 5'W C T G C G A W-3'	PyHpImPyImPy-γ-HpPyImPyPyIm
	3015) 5'W C T G C C T W-3'	PyHpImPyPyHp-γ-PyImImPyPyIm
	3016) 5'W C T G C C A W-3'	PyHpImPyPyPy-γ-HpImImPyPyIm
	3017) 5'W C T G G G G W-3'	PyHpImImImIm-γ-PyPyPyPyPyIm
	3018) 5'W C T G G G C W-3'	PyHpImImImPy-γ-ImPyPyPyPyIm
30	3019) 5'W C T G G C G W-3'	PyHpImImPyIm-γ-PyImPyPyPyIm
	3020) 5'W C T G G C C W-3'	PyHpImImPyPy-γ-ImImPyPyPyIm
	3021) 5'W C T G C G G W-3'	PyHpImPyImIm-γ-PyPyImPyPyIm
	3022) 5'W C T G C G C W-3'	PyHpImPyImPy-γ-ImPyImPyPyIm
	3023) 5'W C T G C C G W-3'	PyHpImPyPyIm-γ-PyImImPyPyIm
35	3024) 5'W C T G C C C W-3'	PyHpImPyPyPy-γ-ImImImPyPyIm

TABLE 142: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCTTWNNW-3'

	DNA sequence	aromatic amino acid sequence
	3025) 5'W C T T T T T W-3'	PyHrHrHrHrHr-γ-PyPyPyPyPyIm
5	3026) 5'W C T T T T A W-3'	PyHrHrHrHrPy-γ-HrPyPyPyPyIm
	3027) 5'W C T T T T G W-3'	PyHrHrHrHrIm-γ-PyPyPyPyPyIm
	3028) 5'W C T T T T C W-3'	PyHrHrHrHrPy-γ-ImPyPyPyPyIm
	3029) 5'W C T T T A T W-3'	PyHrHrHrPyHr-γ-PyHrPyPyPyIm
	3030) 5'W C T T T A A W-3'	PyHrHrHrPyPy-γ-HrHrPyPyPyIm
10	3031) 5'W C T T T A G W-3'	PyHrHrHrPyIm-γ-PyHrPyPyPyIm
	3032) 5'W C T T T A C W-3'	PyHrHrHrPyPy-γ-ImHrPyPyPyIm
	3033) 5'W C T T T G T W-3'	PyHrHrHrImHr-γ-PyPyPyPyPyIm
	3034) 5'W C T T T G A W-3'	PyHrHrHrImPy-γ-HrPyPyPyPyIm
	3035) 5'W C T T T G G W-3'	PyHrHrHrImIm-γ-PyPyPyPyPyIm
15	3036) 5'W C T T T G C W-3'	PyHrHrHrImPy-γ-ImPyPyPyPyIm
	3037) 5'W C T T T C T W-3'	PyHrHrHrPyHr-γ-PyImPyPyPyIm
	3038) 5'W C T T T C A W-3'	PyHrHrHrPyPy-γ-HrImPyPyPyIm
	3039) 5'W C T T T C G W-3'	PyHrHrHrPyIm-γ-PyImPyPyPyIm
	3040) 5'W C T T T C C W-3'	PyHrHrHrPyPy-γ-ImImPyPyPyIm
20	3041) 5'W C T T A T T W-3'	PyHrHrPyHrHr-γ-PyPyHrPyPyIm
	3042) 5'W C T T A T A W-3'	PyHrHrPyHrPy-γ-HrPyHrPyPyIm
	3043) 5'W C T T A T G W-3'	PyHrHrPyHrIm-γ-PyPyHrPyPyIm
	3044) 5'W C T T A T C W-3'	PyHrHrPyHrPy-γ-ImPyHrPyPyIm
	3045) 5'W C T T A A T W-3'	PyHrHrPyPyHr-γ-PyHrHrPyPyIm
25	3046) 5'W C T T A A A W-3'	PyHrHrPyPyPy-γ-HrHrHrPyPyIm
	3047) 5'W C T T A A G W-3'	PyHrHrPyPyIm-γ-PyHrHrPyPyIm
	3048) 5'W C T T A A C W-3'	PyHrHrPyPyPy-γ-ImHrHrPyPyIm
	3049) 5'W C T T A G T W-3'	PyHrHrPyImHr-γ-PyPyHrPyPyIm
	3050) 5'W C T T A G A W-3'	PyHrHrPyImPy-γ-HrPyHrPyPyIm
30	3051) 5'W C T T A G G W-3'	PyHrHrPyImIm-γ-PyPyHrPyPyIm
	3052) 5'W C T T A G C W-3'	PyHrHrPyImPy-γ-ImPyHrPyPyIm
	3053) 5'W C T T A C T W-3'	PyHrHrPyPyHr-γ-PyImHrPyPyIm
	3054) 5'W C T T A C A W-3'	PyHrHrPyPyPy-γ-HrImHrPyPyIm
	3055) 5'W C T T A C G W-3'	PyHrHrPyPyIm-γ-PyImHrPyPyIm
35	3056) 5'W C T T A C C W-3'	PyHrHrPyPyPy-γ-ImImHrPyPyIm

TABLE 143: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCTTSNNW-3'

	DNA sequence	aromatic amino acid sequence
	3057) 5'W C T T G T T W-3'	PyHpHpImHpHp-γ-PyPyPyPyPyIm
5	3058) 5'W C T T G T A W-3'	PyHpHpImHpPy-γ-HpPyPyPyPyIm
	3059) 5'W C T T G T G W-3'	PyHpHpImHpIm-γ-PyPyPyPyPyIm
	3060) 5'W C T T G T C W-3'	PyHpHpImHpPy-γ-ImPyPyPyPyIm
	3061) 5'W C T T G A T W-3'	PyHpHpImPyHp-γ-PyHpPyPyPyIm
	3062) 5'W C T T G A A W-3'	PyHpHpImPyPy-γ-HpHpPyPyPyIm
10	3063) 5'W C T T G A G W-3'	PyHpHpImPyIm-γ-PyHpPyPyPyIm
	3064) 5'W C T T G A C W-3'	PyHpHpImPyPy-γ-ImHpPyPyPyIm
	3065) 5'W C T T G G T W-3'	PyHpHpImImHp-γ-PyPyPyPyPyIm
	3066) 5'W C T T G G A W-3'	PyHpHpImImPy-γ-HpPyPyPyPyIm
	3067) 5'W C T T G C T W-3'	PyHpHpImPyHp-γ-PyImPyPyPyIm
15	3068) 5'W C T T G C A W-3'	PyHpHpImPyPy-γ-HpImPyPyPyIm
	3069) 5'W C T T G G G W-3'	PyHpHpImImIm-γ-PyPyPyPyPyIm
	3070) 5'W C T T G G C W-3'	PyHpHpImImPy-γ-ImPyPyPyPyIm
	3071) 5'W C T T G C G W-3'	PyHpHpImPyIm-γ-PyImPyPyPyIm
	3072) 5'W C T T G C C W-3'	PyHpHpImPyPy-γ-ImImPyPyPyIm
20	3073) 5'W C T T C T T W-3'	PyHpHpPyHpHp-γ-PyPyImPyPyIm
	3074) 5'W C T T C T A W-3'	PyHpHpPyHpPy-γ-HpPyImPyPyIm
	3075) 5'W C T T C T G W-3'	PyHpHpPyHpIm-γ-PyPyImPyPyIm
	3076) 5'W C T T C T C W-3'	PyHpHpPyHpPy-γ-ImPyImPyPyIm
	3077) 5'W C T T C A T W-3'	PyHpHpPyPyHp-γ-PyHpImPyPyIm
25	3078) 5'W C T T C A A W-3'	PyHpHpPyPyPy-γ-HpHpImPyPyIm
	3079) 5'W C T T C A G W-3'	PyHpHpPyPyIm-γ-PyHpImPyPyIm
	3080) 5'W C T T C A C W-3'	PyHpHpPyPyPy-γ-ImHpImPyPyIm
	3081) 5'W C T T C G T W-3'	PyHpHpPyImHp-γ-PyPyImPyPyIm
	3082) 5'W C T T C G A W-3'	PyHpHpPyImPy-γ-HpPyImPyPyIm
30	3083) 5'W C T T C C T W-3'	PyHpHpPyPyHp-γ-PyImImPyPyIm
	3084) 5'W C T T C C A W-3'	PyHpHpPyPyPy-γ-HpImImPyPyIm
	3085) 5'W C T T C G G W-3'	PyHpHpPyImIm-γ-PyPyImPyPyIm
	3086) 5'W C T T C G C W-3'	PyHpHpPyImPy-γ-ImPyImPyPyIm
	3087) 5'W C T T C C G W-3'	PyHpHpPyPyIm-γ-PyImImPyPyIm
35	3088) 5'W C T T C C C W-3'	PyHpHpPyPyPy-γ-ImImImPyPyIm

TABLE 144: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCTAWNNW-3'

	DNA sequence	aromatic amino acid sequence
	3089) 5'W C T A T T T W-3'	PyHpPyHpHpHp-γ-PyPyPyHpPyIm
5	3090) 5'W C T A T T A W-3'	PyHpPyHpHpPy-γ-HpPyPyHpPyIm
	3091) 5'W C T A T T G W-3'	PyHpPyHpHpIm-γ-PyPyPyHpPyIm
	3092) 5'W C T A T T C W-3'	PyHpPyHpHpPy-γ-ImPyPyHpPyIm
	3093) 5'W C T A T A T W-3'	PyHpPyHpPyHp-γ-PyHpPyHpPyIm
	3094) 5'W C T A T A A W-3'	PyHpPyHpPyPy-γ-HpHpPyHpPyIm
10	3095) 5'W C T A T A G W-3'	PyHpPyHpPyIm-γ-PyHpPyHpPyIm
	3096) 5'W C T A T A C W-3'	PyHpPyHpPyPy-γ-ImHpPyHpPyIm
	3097) 5'W C T A T G T W-3'	PyHpPyHpImHp-γ-PyPyPyHpPyIm
	3098) 5'W C T A T G A W-3'	PyHpPyHpImPy-γ-HpPyPyHpPyIm
	3099) 5'W C T A T G G W-3'	PyHpPyHpImIm-γ-PyPyPyHpPyIm
	3100) 5'W C T A T G C W-3'	PyHpPyHpImPy-γ-ImPyPyHpPyIm
	3101) 5'W C T A T C T W-3'	PyHpPyHpPyHp-γ-PyImPyHpPyIm
	3102) 5'W C T A T C A W-3'	PyHpPyHpPyPy-γ-HpImPyHpPyIm
	3103) 5'W C T A T C G W-3'	PyHpPyHpPyIm-γ-PyImPyHpPyIm
	3104) 5'W C T A T C C W-3'	PyHpPyHpPyPy-γ-ImImPyHpPyIm
20	3105) 5'W C T A A T T W-3'	PyHpPyPyHpHp-γ-PyPyHpHpPyIm
	3106) 5'W C T A A T A W-3'	PyHpPyPyHpPy-γ-HpPyHpHpPyIm
	3107) 5'W C T A A T G W-3'	PyHpPyPyHpIm-γ-PyPyHpHpPyIm
	3108) 5'W C T A A T C W-3'	PyHpPyPyHpPy-γ-ImPyHpHpPyIm
	3109) 5'W C T A A A T W-3'	PyHpPyPyPyHp-γ-PyHpHpHpPyIm
25	3110) 5'W C T A A A A W-3'	PyHpPyPyPyPy-γ-HpHpHpHpPyIm
	3111) 5'W C T A A A G W-3'	PyHpPyPyPyIm-γ-PyHpHpHpPyIm
	3112) 5'W C T A A A C W-3'	PyHpPyPyPyPy-γ-ImHpHpHpPyIm
	3113) 5'W C T A A G T W-3'	PyHpPyPyImHp-γ-PyPyHpHpPyIm
	3114) 5'W C T A A G A W-3'	PyHpPyPyImPy-γ-HpPyHpHpPyIm
30	3115) 5'W C T A A G G W-3'	PyHpPyPyImIm-γ-PyPyHpHpPyIm
	3116) 5'W C T A A G C W-3'	PyHpPyPyImPy-γ-ImPyHpHpPyIm
	3117) 5'W C T A A C T W-3'	PyHpPyPyPyHp-γ-PyImHpHpPyIm
	3118) 5'W C T A A C A W-3'	PyHpPyPyPyPy-γ-HpImHpHpPyIm
	3119) 5'W C T A A C G W-3'	PyHpPyPyPyIm-γ-PyImHpHpPyIm
35	3120) 5'W C T A A C C W-3'	PyHpPyPyPyPy-γ-ImImHpHpPyIm

TABLE 145: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCTASNNW-3'

	DNA sequence	aromatic amino acid sequence
	3121) 5'W C T A G T T W-3'	PyHpPyImHpHp-γ-PyPyPyHpPyIm
5	3122) 5'W C T A G T A W-3'	PyHpPyImHpPy-γ-HpPyPyHpPyIm
	3123) 5'W C T A G T G W-3'	PyHpPyImHpIm-γ-PyPyPyHpPyIm
	3124) 5'W C T A G T C W-3'	PyHpPyImHpPy-γ-ImPyPyHpPyIm
	3125) 5'W C T A G A T W-3'	PyHpPyImPyHp-γ-PyHpPyHpPyIm
	3126) 5'W C T A G A A W-3'	PyHpPyImPyPy-γ-HpHpPyHpPyIm
10	3127) 5'W C T A G A G W-3'	PyHpPyImPyIm-γ-PyHpPyHpPyIm
	3128) 5'W C T A G A C W-3'	PyHpPyImPyPy-γ-ImHpPyHpPyIm
	3129) 5'W C T A G G T W-3'	PyHpPyImImHp-γ-PyPyPyHpPyIm
	3130) 5'W C T A G G A W-3'	PyHpPyImImPy-γ-HpPyPyHpPyIm
	3131) 5'W C T A G C T W-3'	PyHpPyImPyHp-γ-PyImPyHpPyIm
	3132) 5'W C T A G C A W-3'	PyHpPyImPyPy-γ-HpImPyHpPyIm
	3133) 5'W C T A G G G W-3'	PyHpPyImImIm-γ-PyPyPyHpPyIm
	3134) 5'W C T A G G C W-3'	PyHpPyImImPy-γ-ImPyPyHpPyIm
	3135) 5'W C T A G C G W-3'	PyHpPyImPyIm-γ-PyImPyHpPyIm
	3136) 5'W C T A G C C W-3'	PyHpPyImPyPy-γ-ImImPyHpPyIm
20	3137) 5'W C T A C T T W-3'	PyHpPyPyHpHp-γ-PyPyImHpPyIm
	3138) 5'W C T A C T A W-3'	PyHpPyPyHpPy-γ-HpPyImHpPyIm
	3139) 5'W C T A C T G W-3'	PyHpPyPyHpIm-γ-PyPyImHpPyIm
	3140) 5'W C T A C T C W-3'	PyHpPyPyHpPy-γ-ImPyImHpPyIm
	3141) 5'W C T A C A T W-3'	PyHpPyPyPyHp-γ-PyHpImHpPyIm
25	3142) 5'W C T A C A A W-3'	PyHpPyPyPyPy-γ-HpHpImHpPyIm
	3143) 5'W C T A C A G W-3'	PyHpPyPyPyIm-γ-PyHpImHpPyIm
	3144) 5'W C T A C A C W-3'	PyHpPyPyPyPy-γ-ImHpImHpPyIm
	3145) 5'W C T A C G T W-3'	PyHpPyPyImHp-γ-PyPyImHpPyIm
	3146) 5'W C T A C G A W-3'	PyHpPyPyImPy-γ-HpPyImHpPyIm
30	3147) 5'W C T A C C T W-3'	PyHpPyPyPyHp-γ-PyImImHpPyIm
	3148) 5'W C T A C C A W-3'	PyHpPyPyPyPy-γ-HpImImHpPyIm
	3149) 5'W C T A C G G W-3'	PyHpPyPyImIm-γ-PyPyImHpPyIm
	3150) 5'W C T A C G C W-3'	PyHpPyPyImPy-γ-ImPyImHpPyIm
	3151) 5'W C T A C C G W-3'	PyHpPyPyPyIm-γ-PyImImHpPyIm
35	3152) 5'W C T A C C C W-3'	PyHpPyPyPyPy-γ-ImImImHpPyIm

TABLE 146: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCTCWNNW-3'

	DNA sequence	aromatic amino acid sequence
	3153) 5'W C T C T T T W-3'	PyHpPyHpHpHp-γ-PyPyPyImPyIm
5	3154) 5'W C T C T T A W-3'	PyHpPyHpHpPy-γ-HpPyPyImPyIm
	3155) 5'W C T C T T G W-3'	PyHpPyHpHpIm-γ-PyPyPyImPyIm
	3156) 5'W C T C T T C W-3'	PyHpPyHpHpPy-γ-ImPyPyImPyIm
	3157) 5'W C T C T A T W-3'	PyHpPyHpPyHp-γ-PyHpPyImPyIm
	3158) 5'W C T C T A A W-3'	PyHpPyHpPyPy-γ-HpHpPyImPyIm
10	3159) 5'W C T C T A G W-3'	PyHpPyHpPyIm-γ-PyHpPyImPyIm
	3160) 5'W C T C T A C W-3'	PyHpPyHpPyPy-γ-ImHpPyImPyIm
	3161) 5'W C T C T G T W-3'	PyHpPyHpImHp-γ-PyPyPyImPyIm
	3162) 5'W C T C T G A W-3'	PyHpPyHpImPy-γ-HpPyPyImPyIm
	3163) 5'W C T C T G G W-3'	PyHpPyHpImIm-γ-PyPyPyImPyIm
	3164) 5'W C T C T G C W-3'	PyHpPyHpImPy-γ-ImPyPyImPyIm
	3165) 5'W C T C T C T W-3'	PyHpPyHpPyHp-γ-PyImPyImPyIm
	3166) 5'W C T C T C A W-3'	PyHpPyHpPyPy-γ-HpImPyImPyIm
	3167) 5'W C T C T C G W-3'	PyHpPyHpPyIm-γ-PyImPyImPyIm
	3168) 5'W C T C T C C W-3'	PyHpPyHpPyPy-γ-ImImPyImPyIm
20	3169) 5'W C T C A T T W-3'	PyHpPyPyHpHp-γ-PyPyHpImPyIm
	3170) 5'W C T C A T A W-3'	PyHpPyPyHpPy-γ-HpPyHpImPyIm
	3171) 5'W C T C A T G W-3'	PyHpPyPyHpIm-γ-PyPyHpImPyIm
	3172) 5'W C T C A T C W-3'	PyHpPyPyHpPy-γ-ImPyHpImPyIm
	3173) 5'W C T C A A T W-3'	PyHpPyPyPyHp-γ-PyHpHpImPyIm
25	3174) 5'W C T C A A A W-3'	PyHpPyPyPyPy-γ-HpHpHpImPyIm
	3175) 5'W C T C A A G W-3'	PyHpPyPyPyIm-γ-PyHpHpImPyIm
	3176) 5'W C T C A A C W-3'	PyHpPyPyPyPy-γ-ImHpHpImPyIm
	3177) 5'W C T C A G T W-3'	PyHpPyPyImHp-γ-PyPyHpImPyIm
	3178) 5'W C T C A G A W-3'	PyHpPyPyImPy-γ-HpPyHpImPyIm
30	3179) 5'W C T C A G G W-3'	PyHpPyPyImIm-γ-PyPyHpImPyIm
	3180) 5'W C T C A G C W-3'	PyHpPyPyImPy-γ-ImPyHpImPyIm
	3181) 5'W C T C A C T W-3'	PyHpPyPyPyHp-γ-PyImHpImPyIm
	3182) 5'W C T C A C A W-3'	PyHpPyPyPyPy-γ-HpImHpImPyIm
	3183) 5'W C T C A C G W-3'	PyHpPyPyPyIm-γ-PyImHpImPyIm
35	3184) 5'W C T C A C C W-3'	PyHpPyPyPyPy-γ-ImImHpImPyIm

TABLE 147: 12-ring Hairpin Polyamides for recognition of 8-bp 5'-WCTCSNNW-3'

	DNA sequence	aromatic amino acid sequence
	3185) 5'W C T C G T T W-3'	PyHpPyImHpHp-γ-PyPyPyImPyIm
5	3186) 5'W C T C G T A W-3'	PyHpPyImHpPy-γ-HpPyPyImPyIm
	3187) 5'W C T C G T G W-3'	PyHpPyImHpIm-γ-PyPyPyImPyIm
	3188) 5'W C T C G T C W-3'	PyHpPyImHpPy-γ-ImPyPyImPyIm
	3189) 5'W C T C G A T W-3'	PyHpPyImPyHp-γ-PyHpPyImPyIm
	3190) 5'W C T C G A A W-3'	PyHpPyImPyPy-γ-HpHpPyImPyIm
10	3191) 5'W C T C G A G W-3'	PyHpPyImPyIm-γ-PyHpPyImPyIm
	3192) 5'W C T C G A C W-3'	PyHpPyImPyPy-γ-ImHpPyImPyIm
	3193) 5'W C T C G G T W-3'	PyHpPyImImHp-γ-PyPyPyImPyIm
	3194) 5'W C T C G G A W-3'	PyHpPyImImPy-γ-HpPyPyImPyIm
	3195) 5'W C T C G C T W-3'	PyHpPyImPyHp-γ-PyImPyImPyIm
	3196) 5'W C T C G C A W-3'	PyHpPyImPyPy-γ-HpImPyImPyIm
	3197) 5'W C T C C T T W-3'	PyHpPyPyHpHp-γ-PyPyImImPyIm
	3198) 5'W C T C C T A W-3'	PyHpPyPyHpPy-γ-HpPyImImPyIm
	3199) 5'W C T C C T G W-3'	PyHpPyPyHpIm-γ-PyPyImImPyIm
	3200) 5'W C T C C T C W-3'	PyHpPyPyHpPy-γ-ImPyImImPyIm
20	3201) 5'W C T C C A T W-3'	PyHpPyPyPyHp-γ-PyHpImImPyIm
	3202) 5'W C T C C A A W-3'	PyHpPyPyPyPy-γ-HpHpImImPyIm
	3203) 5'W C T C C A G W-3'	PyHpPyPyPyIm-γ-PyHpImImPyIm
	3204) 5'W C T C C A C W-3'	PyHpPyPyPyPy-γ-ImHpImImPyIm
	3205) 5'W C T C C G T W-3'	PyHpPyPyImHp-γ-PyPyImImPyIm
25	3206) 5'W C T C C G A W-3'	PyHpPyPyImPy-γ-HpPyImImPyIm
	3207) 5'W C T C C C T W-3'	PyHpPyPyPyHp-γ-PyImImImPyIm
	3208) 5'W C T C C C A W-3'	PyHpPyPyPyPy-γ-HpImImImPyIm
	3209) 5'W C T C G G G W-3'	PyHpPyImImIm-γ-PyPyPyImPyIm
	3210) 5'W C T C G G C W-3'	PyHpPyImImPy-γ-ImPyPyImPyIm
30	3211) 5'W C T C G C G W-3'	PyHpPyImPyIm-γ-PyImPyImPyIm
	3212) 5'W C T C G C C W-3'	PyHpPyImPyPy-γ-ImImPyImPyIm
	3213) 5'W C T C C G G W-3'	PyHpPyPyImIm-γ-PyPyImImPyIm
	3214) 5'W C T C C G C W-3'	PyHpPyPyImPy-γ-ImPyImImPyIm
	3215) 5'W C T C C C G W-3'	PyHpPyPyPyIm-γ-PyImImImPyIm
35	3216) 5'W C T C C C C W-3'	PyHpPyPyPyPy-γ-ImImImImPyIm

TABLE 148: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGGGWNNW-3'

	DNA sequence	aromatic amino acid sequence
	1233 β) 5'-W G G G T T T W-3'	ImImIm- β -HpHp- γ -PyPy- β -PyPyPy
5	1234 β) 5'-W G G G T T A W-3'	ImImIm- β -HpPy- γ -HpPy- β -PyPyPy
	1235 β) 5'-W G G G T T G W-3'	ImImIm- β -HpIm- γ -PyPy- β -PyPyPy
	1236 β) 5'-W G G G T T C W-3'	ImImIm- β -HpPy- γ -ImPy- β -PyPyPy
	1237 β) 5'-W G G G T A T W-3'	ImImIm- β -PyHp- γ -PyHp- β -PyPyPy
	1238 β) 5'-W G G G T A A W-3'	ImImIm- β -PyPy- γ -HpHp- β -PyPyPy
10	1239 β) 5'-W G G G T A G W-3'	ImImIm- β -PyIm- γ -PyHp- β -PyPyPy
	1240 β) 5'-W G G G T A C W-3'	ImImIm- β -PyPy- γ -ImHp- β -PyPyPy
	1241 β) 5'-W G G G T G T W-3'	ImImIm- β -ImHp- γ -PyPy- β -PyPyPy
	1242 β) 5'-W G G G T G A W-3'	ImImIm- β -ImPy- γ -HpPy- β -PyPyPy
	1243 β) 5'-W G G G T G G W-3'	ImImIm- β -ImIm- γ -PyPy- β -PyPyPy
	1244 β) 5'-W G G G T G C W-3'	ImImIm- β -ImPy- γ -ImPy- β -PyPyPy
	1245 β) 5'-W G G G T C T W-3'	ImImIm- β -PyHp- γ -PyIm- β -PyPyPy
	1246 β) 5'-W G G G T C A W-3'	ImImIm- β -PyPy- γ -HpIm- β -PyPyPy
	1247 β) 5'-W G G G T C G W-3'	ImImIm- β -PyIm- γ -PyIm- β -PyPyPy
	1248 β) 5'-W G G G T C C W-3'	ImImIm- β -PyPy- γ -ImIm- β -PyPyPy
	1249 β) 5'-W G G G A T T W-3'	ImImIm- β -HpHp- γ -PyPy- β -PyPyPy
	1250 β) 5'-W G G G A T A W-3'	ImImIm- β -HpPy- γ -HpPy- β -PyPyPy
	1251 β) 5'-W G G G A T G W-3'	ImImIm- β -HpIm- γ -PyPy- β -PyPyPy
	1252 β) 5'-W G G G A T C W-3'	ImImIm- β -HpPy- γ -ImPy- β -PyPyPy
	1253 β) 5'-W G G G A A T W-3'	ImImIm- β -PyHp- γ -PyHp- β -PyPyPy
25	1254 β) 5'-W G G G A A A W-3'	ImImIm- β -PyPy- γ -HpHp- β -PyPyPy
	1255 β) 5'-W G G G A A G W-3'	ImImIm- β -PyIm- γ -PyHp- β -PyPyPy
	1256 β) 5'-W G G G A A C W-3'	ImImIm- β -PyPy- γ -ImHp- β -PyPyPy
	1257 β) 5'-W G G G A G T W-3'	ImImIm- β -ImHp- γ -PyPy- β -PyPyPy
	1258 β) 5'-W G G G A G A W-3'	ImImIm- β -ImPy- γ -HpPy- β -PyPyPy
30	1259 β) 5'-W G G G A G G W-3'	ImImIm- β -ImIm- γ -PyPy- β -PyPyPy
	1260 β) 5'-W G G G A G C W-3'	ImImIm- β -ImPy- γ -ImPy- β -PyPyPy
	1261 β) 5'-W G G G A C T W-3'	ImImIm- β -PyHp- γ -PyIm- β -PyPyPy
	1262 β) 5'-W G G G A C A W-3'	ImImIm- β -PyPy- γ -HpIm- β -PyPyPy
	1263 β) 5'-W G G G A C G W-3'	ImImIm- β -PyIm- γ -PyIm- β -PyPyPy
35	1264 β) 5'-W G G G A C C W-3'	ImImIm- β -PyPy- γ -ImIm- β -PyPyPy

TABLE 149: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGGGSNNW-3'

	DNA sequence	aromatic amino acid sequence
5	1265 β) 5'-W G G G G T T W-3'	ImImImIm- β -Hp- γ -Py- β -PyPyPyPy
	1266 β) 5'-W G G G G T A W-3'	ImImImIm- β -Py- γ -Hp- β -PyPyPyPy
	1267 β) 5'-W G G G G T G W-3'	ImImImIm- β -Im- γ -Py- β -PyPyPyPy
	1268 β) 5'-W G G G G T C W-3'	ImImImIm- β -Py- γ -Im- β -PyPyPyPy
	1269 β) 5'-W G G G G A T W-3'	ImImImIm- β -Hp- γ -Py- β -PyPyPyPy
10	1270 β) 5'-W G G G G A A W-3'	ImImImIm- β -Py- γ -Hp- β -PyPyPyPy
	1271 β) 5'-W G G G G A G W-3'	ImImImIm- β -Im- γ -Py- β -PyPyPyPy
	1272 β) 5'-W G G G G A C W-3'	ImImImIm- β -Py- γ -Im- β -PyPyPyPy
	1275 β) 5'-W G G G G C T W-3'	ImImImIm- β -Hp- γ -PyImPy- β -PyPy
	1276 β) 5'-W G G G G C A W-3'	ImImImIm- β -Py- γ -HpImPy- β -PyPy
	1277 β) 5'-W G G G C T T W-3'	ImImIm- β -HpHp- γ -PyPyIm- β -PyPy
	1278 β) 5'-W G G G C T A W-3'	ImImIm- β -HpPy- γ -HpPyIm- β -PyPy
	1279 β) 5'-W G G G C T G W-3'	ImImIm- β -HpIm- γ -PyPyIm- β -PyPy
	1280 β) 5'-W G G G C T C W-3'	ImImIm- β -HpPy- γ -ImPyIm- β -PyPy
	1281 β) 5'-W G G G C A T W-3'	ImImIm- β -PyHp- γ -PyHpIm- β -PyPy
20	1282 β) 5'-W G G G C A A W-3'	ImImIm- β -PyPy- γ -HpHpIm- β -PyPy
	1283 β) 5'-W G G G C A G W-3'	ImImIm- β -PyIm- γ -PyHpIm- β -PyPy
	1284 β) 5'-W G G G C A C W-3'	ImImIm- β -PyPy- γ -ImHpIm- β -PyPy
	1285 β) 5'-W G G G C G T W-3'	ImImIm- β -ImHp- γ -PyPyIm- β -PyPy
	1286 β) 5'-W G G G C G A W-3'	ImImIm- β -ImPy- γ -HpPyIm- β -PyPy
	1287 β) 5'-W G G G C C T W-3'	ImImIm- β -PyHp- γ -PyImIm- β -PyPy
	1288 β) 5'-W G G G C C A W-3'	ImImIm- β -PyPy- γ -HpImIm- β -PyPy
	G52 β) 5'-W G G G G C C W-3'	ImImImIm- β -Py- γ -ImImPy- β -PyPy
	G53 β) 5'-W G G G C G G W-3'	ImImIm- β -ImIm- γ -PyPyIm- β -PyPy
	G54 β) 5'-W G G G C G C W-3'	ImImIm- β -ImPy- γ -ImPyIm- β -PyPy
25	G55 β) 5'-W G G G C C G W-3'	ImImIm- β -PyIm- γ -PyImIm- β -PyPy
	G56 β) 5'-W G G G C C C W-3'	ImImIm- β -PyPy- γ -ImImIm- β -PyPy
30		

TABLE 150: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGGTWNW-3'

	DNA sequence	aromatic amino acid sequence
	1289 β) 5'-W G G T T T W-3'	ImIm- β -HpHpHp- γ -PyPyPy- β -PyPy
	1290 β) 5'-W G G T T T A W-3'	ImIm- β -HpHpPy- γ -HpPyPy- β -PyPy
5	1291 β) 5'-W G G T T T G W-3'	ImIm- β -HpHpIm- γ -PyPyPy- β -PyPy
	1292 β) 5'-W G G T T T C W-3'	ImIm- β -HpHpPy- γ -ImPyPy- β -PyPy
	1293 β) 5'-W G G T T A T W-3'	ImIm- β -HpPyHp- γ -PyHpPy- β -PyPy
	1294 β) 5'-W G G T T A A W-3'	ImIm- β -HpPyPy- γ -HpHpPy- β -PyPy
	1295 β) 5'-W G G T T A G W-3'	ImIm- β -HpPyIm- γ -PyHpPy- β -PyPy
10	1296 β) 5'-W G G T T A C W-3'	ImIm- β -HpPyPy- γ -ImHpPy- β -PyPy
	1297 β) 5'-W G G T T G T W-3'	ImIm- β -HpImHp- γ -PyPyPy- β -PyPy
	1298 β) 5'-W G G T T G A W-3'	ImIm- β -HpImPy- γ -HpPyPy- β -PyPy
	1299 β) 5'-W G G T T G G W-3'	ImIm- β -HpImIm- γ -PyPyPy- β -PyPy
	1300 β) 5'-W G G T T G C W-3'	ImIm- β -HpImPy- γ -ImPyPy- β -PyPy
	1301 β) 5'-W G G T T C T W-3'	ImIm- β -HpPyHp- γ -PyImPy- β -PyPy
	1302 β) 5'-W G G T T C A W-3'	ImIm- β -HpPyPy- γ -HpImPy- β -PyPy
	1303 β) 5'-W G G T T C G W-3'	ImIm- β -HpPyIm- γ -PyImPy- β -PyPy
	1304 β) 5'-W G G T T C C W-3'	ImIm- β -HpPyPy- γ -ImImPy- β -PyPy
	1305 β) 5'-W G G T A T T W-3'	ImIm- β -PyHpHp- γ -PyPyHp- β -PyPy
	1306 β) 5'-W G G T A T A W-3'	ImIm- β -PyHpPy- γ -HpPyHp- β -PyPy
	1307 β) 5'-W G G T A T G W-3'	ImIm- β -PyHpIm- γ -PyPyHp- β -PyPy
	1308 β) 5'-W G G T A T C W-3'	ImIm- β -PyHpPy- γ -ImPyHp- β -PyPy
	1309 β) 5'-W G G T A A T W-3'	ImIm- β -PyPyHp- γ -PyHpHp- β -PyPy
	1310 β) 5'-W G G T A A A W-3'	ImIm- β -PyPyPy- γ -HpHpHp- β -PyPy
25	1311 β) 5'-W G G T A A G W-3'	ImIm- β -PyPyIm- γ -PyHpHp- β -PyPy
	1312 β) 5'-W G G T A A C W-3'	ImIm- β -PyPyPy- γ -ImHpHp- β -PyPy
	1313 β) 5'-W G G T A G T W-3'	ImIm- β -PyImHp- γ -PyPyHp- β -PyPy
	1314 β) 5'-W G G T A G A W-3'	ImIm- β -PyImPy- γ -HpPyHp- β -PyPy
	1315 β) 5'-W G G T A G G W-3'	ImIm- β -PyImIm- γ -PyPyHp- β -PyPy
30	1316 β) 5'-W G G T A G C W-3'	ImIm- β -PyImPy- γ -ImPyHp- β -PyPy
	1317 β) 5'-W G G T A C T W-3'	ImIm- β -PyPyHp- γ -PyImHp- β -PyPy
	1318 β) 5'-W G G T A C A W-3'	ImIm- β -PyPyPy- γ -HpImHp- β -PyPy
	1319 β) 5'-W G G T A C G W-3'	ImIm- β -PyPyIm- γ -PyImHp- β -PyPy
	1320 β) 5'-W G G T A C C W-3'	ImIm- β -PyPyPy- γ -ImImHp- β -PyPy

TABLE 151: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGGTSNNW-3'

	DNA sequence	aromatic amino acid sequence
	1321 β) 5'-W G G T G T T W-3'	ImIm- β -ImHpHp- γ -PyPyPy- β -PyPy
5	1322 β) 5'-W G G T G T A W-3'	ImIm- β -ImHpPy- γ -HpPyPy- β -PyPy
	1323 β) 5'-W G G T G T G W-3'	ImIm- β -ImHpIm- γ -PyPyPy- β -PyPy
	1324 β) 5'-W G G T G T C W-3'	ImIm- β -ImHpPy- γ -ImPyPy- β -PyPy
	1325 β) 5'-W G G T G A T W-3'	ImIm- β -ImPyHp- γ -PyHpPy- β -PyPy
	1326 β) 5'-W G G T G A A W-3'	ImIm- β -ImPyPy- γ -HpHpPy- β -PyPy
10	1327 β) 5'-W G G T G A G W-3'	ImIm- β -ImPyIm- γ -PyHpPy- β -PyPy
	1328 β) 5'-W G G T G A C W-3'	ImIm- β -ImPyPy- γ -ImHpPy- β -PyPy
	1329 β) 5'-W G G T G G T W-3'	ImIm- β -ImImHp- γ -PyPyPy- β -PyPy
	1330 β) 5'-W G G T G G A W-3'	ImIm- β -ImImPy- γ -HpPyPy- β -PyPy
	1331 β) 5'-W G G T G C T W-3'	ImIm- β -ImPyHp- γ -PyImPy- β -PyPy
	1332 β) 5'-W G G T G C A W-3'	ImIm- β -ImPyPy- γ -HpImPy- β -PyPy
	1333 β) 5'-W G G T G G G W-3'	ImIm- β -ImImIm- γ -PyPyPy- β -PyPy
	1334 β) 5'-W G G T G G C W-3'	ImIm- β -ImImPy- γ -ImPyPy- β -PyPy
	1335 β) 5'-W G G T G C G W-3'	ImIm- β -ImPyIm- γ -PyImPy- β -PyPy
	1336 β) 5'-W G G T G C C W-3'	ImIm- β -ImPyPy- γ -ImImPy- β -PyPy
20	1337 β) 5'-W G G T C T T W-3'	ImIm- β -PyHpHp- γ -PyPyIm- β -PyPy
	1338 β) 5'-W G G T C T A W-3'	ImIm- β -PyHpPy- γ -HpPyIm- β -PyPy
	1339 β) 5'-W G G T C T G W-3'	ImIm- β -PyHpIm- γ -PyPyIm- β -PyPy
	1340 β) 5'-W G G T C T C W-3'	ImIm- β -PyHpPy- γ -ImPyIm- β -PyPy
	1341 β) 5'-W G G T C A T W-3'	ImIm- β -PyPyHp- γ -PyHpIm- β -PyPy
25	1342 β) 5'-W G G T C A A W-3'	ImIm- β -PyPyPy- γ -HpHpIm- β -PyPy
	1343 β) 5'-W G G T C A G W-3'	ImIm- β -PyPyIm- γ -PyHpIm- β -PyPy
	1344 β) 5'-W G G T C A C W-3'	ImIm- β -PyPyPy- γ -ImHpIm- β -PyPy
	1345 β) 5'-W G G T C G T W-3'	ImIm- β -PyImHp- γ -PyPyIm- β -PyPy
	1346 β) 5'-W G G T C G A W-3'	ImIm- β -PyImPy- γ -HpPyIm- β -PyPy
30	1347 β) 5'-W G G T C C T W-3'	ImIm- β -PyPyHp- γ -PyImIm- β -PyPy
	1348 β) 5'-W G G T C C A W-3'	ImIm- β -PyPyPy- γ -HpImIm- β -PyPy
	1349 β) 5'-W G G T C G G W-3'	ImIm- β -PyImIm- γ -PyPyIm- β -PyPy
	1350 β) 5'-W G G T C G C W-3'	ImIm- β -PyImPy- γ -ImPyIm- β -PyPy
	1351 β) 5'-W G G T C C G W-3'	ImIm- β -PyPyIm- γ -PyImIm- β -PyPy
35	1352 β) 5'-W G G T C C C W-3'	ImIm- β -PyPyPy- γ -ImImIm- β -PyPy

TABLE 152: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGGAWNNW-3'

	DNA sequence	aromatic amino acid sequence
	1353 β) 5'-W G G A T T T W-3'	ImIm- β -HpHpHp- γ -PyPyPy- β -PyPy
5	1354 β) 5'-W G G A T T A W-3'	ImIm- β -HpHpPy- γ -HpPyPy- β -PyPy
	1355 β) 5'-W G G A T T G W-3'	ImIm- β -HpHpIm- γ -PyPyPy- β -PyPy
	1356 β) 5'-W G G A T T C W-3'	ImIm- β -HpHpPy- γ -ImPyPy- β -PyPy
	1357 β) 5'-W G G A T A T W-3'	ImIm- β -HpPyHp- γ -PyHpPy- β -PyPy
	1358 β) 5'-W G G A T A A W-3'	ImIm- β -HpPyPy- γ -HpHpPy- β -PyPy
10	1359 β) 5'-W G G A T A G W-3'	ImIm- β -HpPyIm- γ -PyHpPy- β -PyPy
	1360 β) 5'-W G G A T A C W-3'	ImIm- β -HpPyPy- γ -ImHpPy- β -PyPy
	1361 β) 5'-W G G A T G T W-3'	ImIm- β -HpImHp- γ -PyPyPy- β -PyPy
	1362 β) 5'-W G G A T G A W-3'	ImIm- β -HpImPy- γ -HpPyPy- β -PyPy
	1363 β) 5'-W G G A T G G W-3'	ImIm- β -HpImIm- γ -PyPyPy- β -PyPy
	1364 β) 5'-W G G A T G C W-3'	ImIm- β -HpImPy- γ -ImPyPy- β -PyPy
	1365 β) 5'-W G G A T C T W-3'	ImIm- β -HpPyHp- γ -PyImPy- β -PyPy
	1366 β) 5'-W G G A T C A W-3'	ImIm- β -HpPyPy- γ -HpImPy- β -PyPy
	1367 β) 5'-W G G A T C G W-3'	ImIm- β -HpPyIm- γ -PyImPy- β -PyPy
	1368 β) 5'-W G G A T C C W-3'	ImIm- β -HpPyPy- γ -ImImPy- β -PyPy
	1369 β) 5'-W G G A A T T W-3'	ImIm- β -PyHpHp- γ -PyPyHp- β -PyPy
	1370 β) 5'-W G G A A T A W-3'	ImIm- β -PyHpPy- γ -HpPyHp- β -PyPy
	1371 β) 5'-W G G A A T G W-3'	ImIm- β -PyHpIm- γ -PyPyHp- β -PyPy
	1372 β) 5'-W G G A A T C W-3'	ImIm- β -PyHpPy- γ -ImPyHp- β -PyPy
	1373 β) 5'-W G G A A A T W-3'	ImIm- β -PyPyHp- γ -PyHpHp- β -PyPy
25	1374 β) 5'-W G G A A A A W-3'	ImIm- β -PyPyPy- γ -HpHpHp- β -PyPy
	1375 β) 5'-W G G A A A G W-3'	ImIm- β -PyPyIm- γ -PyHpHp- β -PyPy
	1376 β) 5'-W G G A A A C W-3'	ImIm- β -PyPyPy- γ -ImHpHp- β -PyPy
	1377 β) 5'-W G G A A G T W-3'	ImIm- β -PyImHp- γ -PyPyHp- β -PyPy
	1378 β) 5'-W G G A A G A W-3'	ImIm- β -PyImPy- γ -HpPyHp- β -PyPy
30	1379 β) 5'-W G G A A G G W-3'	ImIm- β -PyImIm- γ -PyPyHp- β -PyPy
	1380 β) 5'-W G G A A G C W-3'	ImIm- β -PyImPy- γ -ImPyHp- β -PyPy
	1381 β) 5'-W G G A A C T W-3'	ImIm- β -PyPyHp- γ -PyImHp- β -PyPy
	1382 β) 5'-W G G A A C A W-3'	ImIm- β -PyPyPy- γ -HpImHp- β -PyPy
	1383 β) 5'-W G G A A C G W-3'	ImIm- β -PyPyIm- γ -PyImHp- β -PyPy
35	1384 β) 5'-W G G A A C C W-3'	ImIm- β -PyPyPy- γ -ImImHp- β -PyPy

TABLE 153: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGGASNNW-3'

	DNA sequence	aromatic amino acid sequence
	1385 β) 5'-W G G A G T T W-3'	ImIm- β -ImHpHp- γ -PyPyPy- β -PyPy
5	1386 β) 5'-W G G A G T A W-3'	ImIm- β -ImHpPy- γ -HpPyPy- β -PyPy
	1387 β) 5'-W G G A G T G W-3'	ImIm- β -ImHpIm- γ -PyPyPy- β -PyPy
	1388 β) 5'-W G G A G T C W-3'	ImIm- β -ImHpPy- γ -ImPyPy- β -PyPy
	1389 β) 5'-W G G A G A T W-3'	ImIm- β -ImPyHp- γ -PyHpPy- β -PyPy
	1390 β) 5'-W G G A G A A W-3'	ImIm- β -ImPyPy- γ -HpHpPy- β -PyPy
10	1391 β) 5'-W G G A G A G W-3'	ImIm- β -ImPyIm- γ -PyHpPy- β -PyPy
	1392 β) 5'-W G G A G A C W-3'	ImIm- β -ImPyPy- γ -ImHpPy- β -PyPy
	1393 β) 5'-W G G A G G T W-3'	ImIm- β -ImImHp- γ -PyPyPy- β -PyPy
	1394 β) 5'-W G G A G G A W-3'	ImIm- β -ImImPy- γ -HpPyPy- β -PyPy
	1395 β) 5'-W G G A G C T W-3'	ImIm- β -ImPyHp- γ -PyImPy- β -PyPy
15	1396 β) 5'-W G G A G C A W-3'	ImIm- β -ImPyPy- γ -HpImPy- β -PyPy
	1397 β) 5'-W G G A G G G W-3'	ImIm- β -ImImIm- γ -PyPyPy- β -PyPy
	1398 β) 5'-W G G A G G C W-3'	ImIm- β -ImImPy- γ -ImPyPy- β -PyPy
	1399 β) 5'-W G G A G C G W-3'	ImIm- β -ImPyIm- γ -PyImPy- β -PyPy
	1400 β) 5'-W G G A G C C W-3'	ImIm- β -ImPyPy- γ -ImImPy- β -PyPy
20	1401 β) 5'-W G G A C T T W-3'	ImIm- β -PyHpHp- γ -PyPyIm- β -PyPy
	1402 β) 5'-W G G A C T A W-3'	ImIm- β -PyHpPy- γ -HpPyIm- β -PyPy
	1403 β) 5'-W G G A C T G W-3'	ImIm- β -PyHpIm- γ -PyPyIm- β -PyPy
	1404 β) 5'-W G G A C T C W-3'	ImIm- β -PyHpPy- γ -ImPyIm- β -PyPy
	1405 β) 5'-W G G A C A T W-3'	ImIm- β -PyPyHp- γ -PyHpIm- β -PyPy
25	1406 β) 5'-W G G A C A A W-3'	ImIm- β -PyPyPy- γ -HpHpIm- β -PyPy
	1407 β) 5'-W G G A C A G W-3'	ImIm- β -PyPyIm- γ -PyHpIm- β -PyPy
	1408 β) 5'-W G G A C A C W-3'	ImIm- β -PyPyPy- γ -ImHpIm- β -PyPy
	1409 β) 5'-W G G A C G T W-3'	ImIm- β -PyImHp- γ -PyPyIm- β -PyPy
	1410 β) 5'-W G G A C G A W-3'	ImIm- β -PyImPy- γ -HpPyIm- β -PyPy
30	1411 β) 5'-W G G A C C T W-3'	ImIm- β -PyPyHp- γ -PyImIm- β -PyPy
	1412 β) 5'-W G G A C C A W-3'	ImIm- β -PyPyPy- γ -HpImIm- β -PyPy
	1413 β) 5'-W G G A C G G W-3'	ImIm- β -PyImIm- γ -PyPyIm- β -PyPy
	1414 β) 5'-W G G A C G C W-3'	ImIm- β -PyImPy- γ -ImPyIm- β -PyPy
	1415 β) 5'-W G G A C C G W-3'	ImIm- β -PyPyIm- γ -PyImIm- β -PyPy
35	1416 β) 5'-W G G A C C C W-3'	ImIm- β -PyPyPy- γ -ImImIm- β -PyPy

TABLE 154: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGGCWNNW-3'

	DNA sequence	aromatic amino acid sequence
	1417 β) 5'-W G G C T T T W-3'	ImImPy- β -HpHp- γ -PyPy- β -ImPyPy
5	1418 β) 5'-W G G C T T A W-3'	ImImPy- β -HpPy- γ -HpPy- β -ImPyPy
	1419 β) 5'-W G G C T T G W-3'	ImImPy- β -HpIm- γ -PyPy- β -ImPyPy
	1420 β) 5'-W G G C T T C W-3'	ImImPy- β -HpPy- γ -ImPy- β -ImPyPy
	1421 β) 5'-W G G C T A T W-3'	ImImPy- β -PyHp- γ -PyHp- β -ImPyPy
	1422 β) 5'-W G G C T A A W-3'	ImImPy- β -PyPy- γ -HpHp- β -ImPyPy
10	1423 β) 5'-W G G C T A G W-3'	ImImPy- β -PyIm- γ -PyHp- β -ImPyPy
	1424 β) 5'-W G G C T A C W-3'	ImImPy- β -PyPy- γ -ImHp- β -ImPyPy
	1425 β) 5'-W G G C T G T W-3'	ImImPy- β -ImHp- γ -PyPy- β -ImPyPy
	1426 β) 5'-W G G C T G A W-3'	ImImPy- β -ImPy- γ -HpPy- β -ImPyPy
	1427 β) 5'-W G G C T G G W-3'	ImImPy- β -ImIm- γ -PyPy- β -ImPyPy
	1428 β) 5'-W G G C T G C W-3'	ImImPy- β -ImPy- γ -ImPy- β -ImPyPy
	1429 β) 5'-W G G C T C T W-3'	ImImPy- β -PyHp- γ -PyIm- β -ImPyPy
	1430 β) 5'-W G G C T C A W-3'	ImImPy- β -PyPy- γ -HpIm- β -ImPyPy
	1431 β) 5'-W G G C T C G W-3'	ImImPy- β -PyIm- γ -PyIm- β -ImPyPy
	1432 β) 5'-W G G C T C C W-3'	ImImPy- β -PyPy- γ -ImIm- β -ImPyPy
20	1433 β) 5'-W G G C A T T W-3'	ImImPy- β -HpHp- γ -PyPy- β -ImPyPy
	1434 β) 5'-W G G C A T A W-3'	ImImPy- β -HpPy- γ -HpPy- β -ImPyPy
	1435 β) 5'-W G G C A T G W-3'	ImImPy- β -HpIm- γ -PyPy- β -ImPyPy
	1436 β) 5'-W G G C A T C W-3'	ImImPy- β -HpPy- γ -ImPy- β -ImPyPy
	1437 β) 5'-W G G C A A T W-3'	ImImPy- β -PyHp- γ -PyHp- β -ImPyPy
25	1438 β) 5'-W G G C A A A W-3'	ImImPy- β -PyPy- γ -HpHp- β -ImPyPy
	1439 β) 5'-W G G C A A G W-3'	ImImPy- β -PyIm- γ -PyHp- β -ImPyPy
	1440 β) 5'-W G G C A A C W-3'	ImImPy- β -PyPy- γ -ImHp- β -ImPyPy
	1441 β) 5'-W G G C A G T W-3'	ImImPy- β -ImHp- γ -PyPy- β -ImPyPy
	1442 β) 5'-W G G C A G A W-3'	ImImPy- β -ImPy- γ -HpPy- β -ImPyPy
30	1443 β) 5'-W G G C A G G W-3'	ImImPy- β -ImIm- γ -PyPy- β -ImPyPy
	1444 β) 5'-W G G C A G C W-3'	ImImPy- β -ImPy- γ -ImPy- β -ImPyPy
	1445 β) 5'-W G G C A C T W-3'	ImImPy- β -PyHp- γ -PyIm- β -ImPyPy
	1446 β) 5'-W G G C A C A W-3'	ImImPy- β -PyPy- γ -HpIm- β -ImPyPy
	1447 β) 5'-W G G C A C G W-3'	ImImPy- β -PyIm- γ -PyIm- β -ImPyPy
35	1448 β) 5'-W G G C A C C W-3'	ImImPy- β -PyPy- γ -ImIm- β -ImPyPy

TABLE 155: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGGCSNNW-3'

	DNA sequence	aromatic amino acid sequence
	1449 β) 5'-W G G C G T T W-3'	ImIm- β -ImHpHp- γ -PyPy- β -ImPyPy
5	1450 β) 5'-W G G C G T A W-3'	ImIm- β -ImHpPy- γ -HpPy- β -ImPyPy
	1451 β) 5'-W G G C G T G W-3'	ImIm- β -ImHpIm- γ -PyPy- β -ImPyPy
	1452 β) 5'-W G G C G T C W-3'	ImIm- β -ImHpPy- γ -ImPy- β -ImPyPy
	1453 β) 5'-W G G C G A T W-3'	ImIm- β -ImPyHp- γ -PyHp- β -ImPyPy
	1454 β) 5'-W G G C G A A W-3'	ImIm- β -ImPyPy- γ -HpHp- β -ImPyPy
10	1455 β) 5'-W G G C G A G W-3'	ImIm- β -ImPyIm- γ -PyHp- β -ImPyPy
	1456 β) 5'-W G G C G A C W-3'	ImIm- β -ImPyPy- γ -ImHp- β -ImPyPy
	1457 β) 5'-W G G C G G T W-3'	ImIm- β -ImImHp- γ -PyPy- β -ImPyPy
	1458 β) 5'-W G G C G G A W-3'	ImIm- β -ImImPy- γ -HpPy- β -ImPyPy
	1459 β) 5'-W G G C G C T W-3'	ImIm- β -ImPyHp- γ -PyIm- β -ImPyPy
15	1460 β) 5'-W G G C G C A W-3'	ImIm- β -ImPyPy- γ -HpIm- β -ImPyPy
	1461 β) 5'-W G G C C T T W-3'	ImIm- β -PyHpHp- γ -Py- β -ImImPyPy
	1462 β) 5'-W G G C C T A W-3'	ImIm- β -PyHpPy- γ -Hp- β -ImImPyPy
	1463 β) 5'-W G G C C T G W-3'	ImIm- β -PyHpIm- γ -Py- β -ImImPyPy
	1464 β) 5'-W G G C C T C W-3'	ImIm- β -PyHpPy- γ -Im- β -ImImPyPy
20	1465 β) 5'-W G G C C A T W-3'	ImIm- β -PyPyHp- γ -Py- β -ImImPyPy
	1466 β) 5'-W G G C C A A W-3'	ImIm- β -PyPyPy- γ -Hp- β -ImImPyPy
	1467 β) 5'-W G G C C A G W-3'	ImIm- β -PyPyIm- γ -Py- β -ImImPyPy
	1468 β) 5'-W G G C C A C W-3'	ImIm- β -PyPyPy- γ -Im- β -ImImPyPy
	1469 β) 5'-W G G C C G T W-3'	ImIm- β -PyImHp- γ -Py- β -ImImPyPy
25	1470 β) 5'-W G G C C G A W-3'	ImIm- β -PyImPy- γ -Hp- β -ImImPyPy
	1471 β) 5'-W G G C C C T W-3'	ImIm- β -PyPyHp- γ -PyImImIm- β -Py
	1472 β) 5'-W G G C C C A W-3'	ImIm- β -PyPyPy- γ -HpImImIm- β -Py
	G57 β) 5'-W G G C G G G W-3'	ImIm- β -ImImIm- γ -PyPy- β -ImPyPy
	G58 β) 5'-W G G C G G C W-3'	ImIm- β -ImImPy- γ -ImPy- β -ImPyPy
30	G59 β) 5'-W G G C G C G W-3'	ImIm- β -ImPyIm- γ -PyIm- β -ImPyPy
	G60 β) 5'-W G G C G C C W-3'	ImIm- β -ImPyPy- γ -ImIm- β -ImPyPy
	G61 β) 5'-W G G C C G G W-3'	ImIm- β -PyImIm- γ -Py- β -ImImPyPy
	G62 β) 5'-W G G C C G C W-3'	ImIm- β -PyImPy- γ -Im- β -ImImPyPy
	G63 β) 5'-W G G C C C G W-3'	ImIm- β -PyPyIm- γ -PyImImIm- β -Py
35	G64 β) 5'-W G G C C C C W-3'	ImIm- β -PyPyPy- γ -ImImImIm- β -Py

TABLE 156: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGCGWNNW-3'

	DNA sequence	aromatic amino acid sequence
	1473 β) 5'-W G C G T T T W-3'	ImPyIm- β -HpHp- γ -PyPyPy- β -ImPy
5	1474 β) 5'-W G C G T T A W-3'	ImPyIm- β -HpPy- γ -HpPyPy- β -ImPy
	1475 β) 5'-W G C G T T G W-3'	ImPyIm- β -HpIm- γ -PyPyPy- β -ImPy
	1476 β) 5'-W G C G T T C W-3'	ImPyIm- β -HpPy- γ -ImPyPy- β -ImPy
	1477 β) 5'-W G C G T A T W-3'	ImPyIm- β -PyHp- γ -PyHpPy- β -ImPy
	1478 β) 5'-W G C G T A A W-3'	ImPyIm- β -PyPy- γ -HpHpPy- β -ImPy
10	1479 β) 5'-W G C G T A G W-3'	ImPyIm- β -PyIm- γ -PyHpPy- β -ImPy
	1480 β) 5'-W G C G T A C W-3'	ImPyIm- β -PyPy- γ -ImHpPy- β -ImPy
	1481 β) 5'-W G C G T G T W-3'	ImPyIm- β -ImHp- γ -PyPyPy- β -ImPy
	1482 β) 5'-W G C G T G A W-3'	ImPyIm- β -ImPy- γ -HpPyPy- β -ImPy
	1483 β) 5'-W G C G T G G W-3'	ImPyIm- β -ImIm- γ -PyPyPy- β -ImPy
15	1484 β) 5'-W G C G T G C W-3'	ImPyIm- β -ImPy- γ -ImPyPy- β -ImPy
	1485 β) 5'-W G C G T C T W-3'	ImPyIm- β -PyHp- γ -PyImPy- β -ImPy
	1486 β) 5'-W G C G T C A W-3'	ImPyIm- β -PyPy- γ -HpImPy- β -ImPy
	1487 β) 5'-W G C G T C G W-3'	ImPyIm- β -PyIm- γ -PyImPy- β -ImPy
	1488 β) 5'-W G C G T C C W-3'	ImPyIm- β -PyPy- γ -ImImPy- β -ImPy
20	1489 β) 5'-W G C G A T T W-3'	ImPyIm- β -HpHp- γ -PyPyHp- β -ImPy
	1490 β) 5'-W G C G A T A W-3'	ImPyIm- β -HpPy- γ -HpPyHp- β -ImPy
	1491 β) 5'-W G C G A T G W-3'	ImPyIm- β -HpIm- γ -PyPyHp- β -ImPy
	1492 β) 5'-W G C G A T C W-3'	ImPyIm- β -HpPy- γ -ImPyHp- β -ImPy
	1493 β) 5'-W G C G A A T W-3'	ImPyIm- β -PyHp- γ -PyHpHp- β -ImPy
25	1494 β) 5'-W G C G A A A W-3'	ImPyIm- β -PyPy- γ -HpHpHp- β -ImPy
	1495 β) 5'-W G C G A A G W-3'	ImPyIm- β -PyIm- γ -PyHpHp- β -ImPy
	1496 β) 5'-W G C G A A C W-3'	ImPyIm- β -PyPy- γ -ImHpHp- β -ImPy
	1497 β) 5'-W G C G A G T W-3'	ImPyIm- β -ImHp- γ -PyPyHp- β -ImPy
	1498 β) 5'-W G C G A G A W-3'	ImPyIm- β -ImPy- γ -HpPyHp- β -ImPy
30	1499 β) 5'-W G C G A G G W-3'	ImPyIm- β -ImIm- γ -PyPyHp- β -ImPy
	1490 β) 5'-W G C G A G C W-3'	ImPyIm- β -ImPy- γ -ImPyHp- β -ImPy
	1501 β) 5'-W G C G A C T W-3'	ImPyIm- β -PyHp- γ -PyImHp- β -ImPy
	1502 β) 5'-W G C G A C A W-3'	ImPyIm- β -PyPy- γ -HpImHp- β -ImPy
	1503 β) 5'-W G C G A C G W-3'	ImPyIm- β -PyIm- γ -PyImHp- β -ImPy
35	1504 β) 5'-W G C G A C C W-3'	ImPyIm- β -PyPy- γ -ImImHp- β -ImPy

TABLE 157: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGCGSNNW-3'

	DNA sequence	aromatic amino acid sequence
	1505 β) 5'-W G C G G T T W-3'	Im- β -ImImHpHp- γ -PyPyPy- β -ImPy
5	1506 β) 5'-W G C G G T A W-3'	Im- β -ImImHpPy- γ -HpPyPy- β -ImPy
	1507 β) 5'-W G C G G T G W-3'	Im- β -ImImHpIm- γ -PyPyPy- β -ImPy
	1508 β) 5'-W G C G G T C W-3'	Im- β -ImImHpPy- γ -ImPyPy- β -ImPy
	1509 β) 5'-W G C G G A T W-3'	Im- β -ImImPyHp- γ -PyHpPy- β -ImPy
	1510 β) 5'-W G C G G A A W-3'	Im- β -ImImPyPy- γ -HpHpPy- β -ImPy
10	1511 β) 5'-W G C G G A G W-3'	Im- β -ImImPyIm- γ -PyHpPy- β -ImPy
	1512 β) 5'-W G C G G A C W-3'	Im- β -ImImPyPy- γ -ImHpPy- β -ImPy
	1513 β) 5'-W G C G G G T W-3'	Im- β -ImImImHp- γ -PyPyPy- β -ImPy
	1514 β) 5'-W G C G G G A W-3'	Im- β -ImImImPy- γ -HpPyPy- β -ImPy
	1515 β) 5'-W G C G G C T W-3'	Im- β -ImImPyHp- γ -PyImPy- β -ImPy
	1516 β) 5'-W G C G G C A W-3'	Im- β -ImImPyPy- γ -HpImPy- β -ImPy
	1517 β) 5'-W G C G C T T W-3'	ImPyIm- β -HpHp- γ -PyPyIm- β -ImPy
	1518 β) 5'-W G C G C T A W-3'	ImPyIm- β -HpPy- γ -HpPyIm- β -ImPy
	1519 β) 5'-W G C G C T G W-3'	ImPyIm- β -HpIm- γ -PyPyIm- β -ImPy
	1520 β) 5'-W G C G C T C W-3'	ImPyIm- β -HpPy- γ -ImPyIm- β -ImPy
	1521 β) 5'-W G C G C A T W-3'	ImPyIm- β -PyHp- γ -PyHpIm- β -ImPy
	1522 β) 5'-W G C G C A A W-3'	ImPyIm- β -PyPy- γ -HpHpIm- β -ImPy
	1523 β) 5'-W G C G C A G W-3'	ImPyIm- β -PyIm- γ -PyHpIm- β -ImPy
	1524 β) 5'-W G C G C A C W-3'	ImPyIm- β -PyPy- γ -ImHpIm- β -ImPy
	1525 β) 5'-W G C G C G T W-3'	ImPyIm- β -ImHp- γ -PyPyIm- β -ImPy
25	1526 β) 5'-W G C G C G A W-3'	ImPyIm- β -ImPy- γ -HpPyIm- β -ImPy
	1527 β) 5'-W G C G C C T W-3'	ImPyIm- β -PyHp- γ -PyImIm- β -ImPy
	1528 β) 5'-W G C G C C A W-3'	ImPyIm- β -PyPy- γ -HpImIm- β -ImPy
	G65 β) 5'-W G C G G G G W-3'	Im- β -ImImImIm- γ -PyPyPy- β -ImPy
	G66 β) 5'-W G C G G G C W-3'	Im- β -ImImImPy- γ -ImPyPy- β -ImPy
30	G67 β) 5'-W G C G G C G W-3'	Im- β -ImImPyIm- γ -PyImPy- β -ImPy
	G68 β) 5'-W G C G G C C W-3'	Im- β -ImImPyPy- γ -ImImPy- β -ImPy
	G69 β) 5'-W G C G C G G W-3'	ImPyIm- β -ImIm- γ -PyPyIm- β -ImPy
	G70 β) 5'-W G C G C G C W-3'	ImPyIm- β -ImPy- γ -ImPyIm- β -ImPy
	G71 β) 5'-W G C G C C G W-3'	ImPyIm- β -PyIm- γ -PyImIm- β -ImPy
35	G72 β) 5'-W G C G C C C W-3'	ImPyIm- β -PyPy- γ -ImImIm- β -ImPy

TABLE 158: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGCTWNNW-3'

	DNA sequence	aromatic amino acid sequence
	1529 β) 5'-W G C T T T T W-3'	ImPy- β -HpHpHp- γ -PyPyPy- β -ImPy
5	1530 β) 5'-W G C T T T A W-3'	ImPy- β -HpHpPy- γ -HpPyPy- β -ImPy
	1531 β) 5'-W G C T T T G W-3'	ImPy- β -HpHpIm- γ -PyPyPy- β -ImPy
	1532 β) 5'-W G C T T T C W-3'	ImPy- β -HpHpPy- γ -ImPyPy- β -ImPy
	1533 β) 5'-W G C T T A T W-3'	ImPy- β -HpPyHp- γ -PyHpPy- β -ImPy
	1534 β) 5'-W G C T T A A W-3'	ImPy- β -HpPyPy- γ -HpHpPy- β -ImPy
10	1535 β) 5'-W G C T T A G W-3'	ImPy- β -HpPyIm- γ -PyHpPy- β -ImPy
	1536 β) 5'-W G C T T A C W-3'	ImPy- β -HpPyPy- γ -ImHpPy- β -ImPy
	1537 β) 5'-W G C T T G T W-3'	ImPy- β -HpImHp- γ -PyPyPy- β -ImPy
	1538 β) 5'-W G C T T G A W-3'	ImPy- β -HpImPy- γ -HpPyPy- β -ImPy
	1539 β) 5'-W G C T T G G W-3'	ImPy- β -HpImIm- γ -PyPyPy- β -ImPy
15	1540 β) 5'-W G C T T G C W-3'	ImPy- β -HpImPy- γ -ImPyPy- β -ImPy
	1541 β) 5'-W G C T T C T W-3'	ImPy- β -HpPyHp- γ -PyImPy- β -ImPy
	1542 β) 5'-W G C T T C A W-3'	ImPy- β -HpPyPy- γ -HpImPy- β -ImPy
	1543 β) 5'-W G C T T C G W-3'	ImPy- β -HpPyIm- γ -PyImPy- β -ImPy
	1544 β) 5'-W G C T T C C W-3'	ImPy- β -HpPyPy- γ -ImImPy- β -ImPy
20	1545 β) 5'-W G C T A T T W-3'	ImPy- β -PyHpHp- γ -PyPyHp- β -ImPy
	1546 β) 5'-W G C T A T A W-3'	ImPy- β -PyHpPy- γ -HpPyHp- β -ImPy
	1547 β) 5'-W G C T A T G W-3'	ImPy- β -PyHpIm- γ -PyPyHp- β -ImPy
	1548 β) 5'-W G C T A T C W-3'	ImPy- β -PyHpPy- γ -ImPyHp- β -ImPy
	1549 β) 5'-W G C T A A T W-3'	ImPy- β -PyPyHp- γ -PyHpHp- β -ImPy
25	1550 β) 5'-W G C T A A A W-3'	ImPy- β -PyPyPy- γ -HpHpHp- β -ImPy
	1551 β) 5'-W G C T A A G W-3'	ImPy- β -PyPyIm- γ -PyHpHp- β -ImPy
	1552 β) 5'-W G C T A A C W-3'	ImPy- β -PyPyPy- γ -ImHpHp- β -ImPy
	1553 β) 5'-W G C T A G T W-3'	ImPy- β -PyImHp- γ -PyPyHp- β -ImPy
	1554 β) 5'-W G C T A G A W-3'	ImPy- β -PyImPy- γ -HpPyHp- β -ImPy
30	1555 β) 5'-W G C T A G G W-3'	ImPy- β -PyImIm- γ -PyPyHp- β -ImPy
	1556 β) 5'-W G C T A G C W-3'	ImPy- β -PyImPy- γ -ImPyHp- β -ImPy
	1557 β) 5'-W G C T A C T W-3'	ImPy- β -PyPyHp- γ -PyImHp- β -ImPy
	1558 β) 5'-W G C T A C A W-3'	ImPy- β -PyPyPy- γ -HpImHp- β -ImPy
	1559 β) 5'-W G C T A C G W-3'	ImPy- β -PyPyIm- γ -PyImHp- β -ImPy
35	1560 β) 5'-W G C T A C C W-3'	ImPy- β -PyPyPy- γ -ImImHp- β -ImPy

TABLE 159: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGCTSNW-3'

	DNA sequence	aromatic amino acid sequence
	1561 β) 5'-W G C T G T T W-3'	ImPy- β -ImHpHp- γ -PyPyPy- β -ImPy
5	1562 β) 5'-W G C T G T A W-3'	ImPy- β -ImHpPy- γ -HpPyPy- β -ImPy
	1563 β) 5'-W G C T G T G W-3'	ImPy- β -ImHpIm- γ -PyPyPy- β -ImPy
	1564 β) 5'-W G C T G T C W-3'	ImPy- β -ImHpPy- γ -ImPyPy- β -ImPy
	1565 β) 5'-W G C T G A T W-3'	ImPy- β -ImPyHp- γ -PyHpPy- β -ImPy
	1566 β) 5'-W G C T G A A W-3'	ImPy- β -ImPyPy- γ -HpHpPy- β -ImPy
10	1567 β) 5'-W G C T G A G W-3'	ImPy- β -ImPyIm- γ -PyHpPy- β -ImPy
	1568 β) 5'-W G C T G A C W-3'	ImPy- β -ImPyPy- γ -ImHpPy- β -ImPy
	1569 β) 5'-W G C T G G T W-3'	ImPy- β -ImImHp- γ -PyPyPy- β -ImPy
	1570 β) 5'-W G C T G G A W-3'	ImPy- β -ImImPy- γ -HpPyPy- β -ImPy
	1571 β) 5'-W G C T G C T W-3'	ImPy- β -ImPyHp- γ -PyImPy- β -ImPy
15	1572 β) 5'-W G C T G C A W-3'	ImPy- β -ImPyPy- γ -HpImPy- β -ImPy
	1573 β) 5'-W G C T G G G W-3'	ImPy- β -ImImIm- γ -PyPyPy- β -ImPy
	1574 β) 5'-W G C T G G C W-3'	ImPy- β -ImImPy- γ -ImPyPy- β -ImPy
	1575 β) 5'-W G C T G C G W-3'	ImPy- β -ImPyIm- γ -PyImPy- β -ImPy
	1576 β) 5'-W G C T G C C W-3'	ImPy- β -ImPyPy- γ -ImImPy- β -ImPy
20	1577 β) 5'-W G C T C T T W-3'	ImPy- β -PyHpHp- γ -PyPyIm- β -ImPy
	1578 β) 5'-W G C T C T A W-3'	ImPy- β -PyHpPy- γ -HpPyIm- β -ImPy
	1579 β) 5'-W G C T C T G W-3'	ImPy- β -PyHpIm- γ -PyPyIm- β -ImPy
	1580 β) 5'-W G C T C T C W-3'	ImPy- β -PyHpPy- γ -ImPyIm- β -ImPy
	1581 β) 5'-W G C T C A T W-3'	ImPy- β -PyPyHp- γ -PyHpIm- β -ImPy
25	1582 β) 5'-W G C T C A A W-3'	ImPy- β -PyPyPy- γ -HpHpIm- β -ImPy
	1583 β) 5'-W G C T C A G W-3'	ImPy- β -PyPyIm- γ -PyHpIm- β -ImPy
	1584 β) 5'-W G C T C A C W-3'	ImPy- β -PyPyPy- γ -ImHpIm- β -ImPy
	1585 β) 5'-W G C T C G T W-3'	ImPy- β -PyImHp- γ -PyPyIm- β -ImPy
	1586 β) 5'-W G C T C G A W-3'	ImPy- β -PyImPy- γ -HpPyIm- β -ImPy
30	1587 β) 5'-W G C T C C T W-3'	ImPy- β -PyPyHp- γ -PyImIm- β -ImPy
	1588 β) 5'-W G C T C C A W-3'	ImPy- β -PyPyPy- γ -HpImIm- β -ImPy
	1589 β) 5'-W G C T C G G W-3'	ImPy- β -PyImIm- γ -PyPyIm- β -ImPy
	1590 β) 5'-W G C T C G C W-3'	ImPy- β -PyImPy- γ -ImPyIm- β -ImPy
	1591 β) 5'-W G C T C C G W-3'	ImPy- β -PyPyIm- γ -PyImIm- β -ImPy
35	1592 β) 5'-W G C T C C C W-3'	ImPy- β -PyPyPy- γ -ImImIm- β -ImPy

TABLE 160: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGCAWNNW-3'

	DNA sequence	aromatic amino acid sequence
	1593 β) 5'-W G C A T T T W-3'	ImPy- β -HpHpHp- γ -PyPyPy- β -ImPy
5	1594 β) 5'-W G C A T T A W-3'	ImPy- β -HpHpPy- γ -HpPyPy- β -ImPy
	1595 β) 5'-W G C A T T G W-3'	ImPy- β -HpHpIm- γ -PyPyPy- β -ImPy
	1596 β) 5'-W G C A T T C W-3'	ImPy- β -HpHpPy- γ -ImPyPy- β -ImPy
	1597 β) 5'-W G C A T A T W-3'	ImPy- β -HpPyHp- γ -PyHpPy- β -ImPy
	1598 β) 5'-W G C A T A A W-3'	ImPy- β -HpPyPy- γ -HpHpPy- β -ImPy
10	1599 β) 5'-W G C A T A G W-3'	ImPy- β -HpPyIm- γ -PyHpPy- β -ImPy
	1600 β) 5'-W G C A T A C W-3'	ImPy- β -HpPyPy- γ -ImHpPy- β -ImPy
	1601 β) 5'-W G C A T G T W-3'	ImPy- β -HpImHp- γ -PyPyPy- β -ImPy
	1602 β) 5'-W G C A T G A W-3'	ImPy- β -HpImPy- γ -HpPyPy- β -ImPy
	1603 β) 5'-W G C A T G G W-3'	ImPy- β -HpImIm- γ -PyPyPy- β -ImPy
	1604 β) 5'-W G C A T G C W-3'	ImPy- β -HpImPy- γ -ImPyPy- β -ImPy
	1605 β) 5'-W G C A T C T W-3'	ImPy- β -HpPyHp- γ -PyImPy- β -ImPy
	1606 β) 5'-W G C A T C A W-3'	ImPy- β -HpPyPy- γ -HpImPy- β -ImPy
	1607 β) 5'-W G C A T C G W-3'	ImPy- β -HpPyIm- γ -PyImPy- β -ImPy
	1608 β) 5'-W G C A T C C W-3'	ImPy- β -HpPyPy- γ -ImImPy- β -ImPy
	1609 β) 5'-W G C A A T T W-3'	ImPy- β -PyHpHp- γ -PyPyHp- β -ImPy
	1610 β) 5'-W G C A A T A W-3'	ImPy- β -PyHpPy- γ -HpPyHp- β -ImPy
	1611 β) 5'-W G C A A T G W-3'	ImPy- β -PyHpIm- γ -PyPyHp- β -ImPy
	1612 β) 5'-W G C A A T C W-3'	ImPy- β -PyHpPy- γ -ImPyHp- β -ImPy
	1613 β) 5'-W G C A A A T W-3'	ImPy- β -PyPyHp- γ -PyHpHp- β -ImPy
25	1614 β) 5'-W G C A A A A W-3'	ImPy- β -PyPyPy- γ -HpHpHp- β -ImPy
	1615 β) 5'-W G C A A A G W-3'	ImPy- β -PyPyIm- γ -PyHpHp- β -ImPy
	1616 β) 5'-W G C A A A C W-3'	ImPy- β -PyPyPy- γ -ImHpHp- β -ImPy
	1617 β) 5'-W G C A A G T W-3'	ImPy- β -PyImHp- γ -PyPyHp- β -ImPy
	1618 β) 5'-W G C A A G A W-3'	ImPy- β -PyImPy- γ -HpPyHp- β -ImPy
30	1619 β) 5'-W G C A A G G W-3'	ImPy- β -PyImIm- γ -PyPyHp- β -ImPy
	1620 β) 5'-W G C A A G C W-3'	ImPy- β -PyImPy- γ -ImPyHp- β -ImPy
	1621 β) 5'-W G C A A C T W-3'	ImPy- β -PyPyHp- γ -PyImHp- β -ImPy
	1622 β) 5'-W G C A A C A W-3'	ImPy- β -PyPyPy- γ -HpImHp- β -ImPy
	1623 β) 5'-W G C A A C G W-3'	ImPy- β -PyPyIm- γ -PyImHp- β -ImPy
35	1624 β) 5'-W G C A A C C W-3'	ImPy- β -PyPyPy- γ -ImImHp- β -ImPy

TABLE 161: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGCASNNW-3'

	DNA sequence	aromatic amino acid sequence
	1625 β) 5'-W G C A G T T W-3'	ImPy- β -ImHpHp- γ -PyPyPy- β -ImPy
5	1626 β) 5'-W G C A G T A W-3'	ImPy- β -ImHpPy- γ -HpPyPy- β -ImPy
	1627 β) 5'-W G C A G T G W-3'	ImPy- β -ImHpIm- γ -PyPyPy- β -ImPy
	1628 β) 5'-W G C A G T C W-3'	ImPy- β -ImHpPy- γ -ImPyPy- β -ImPy
	1629 β) 5'-W G C A G A T W-3'	ImPy- β -ImPyHp- γ -PyHpPy- β -ImPy
	1630 β) 5'-W G C A G A A W-3'	ImPy- β -ImPyPy- γ -HpHpPy- β -ImPy
10	1631 β) 5'-W G C A G A G W-3'	ImPy- β -ImPyIm- γ -PyHpPy- β -ImPy
	1632 β) 5'-W G C A G A C W-3'	ImPy- β -ImPyPy- γ -ImHpPy- β -ImPy
	1633 β) 5'-W G C A G G T W-3'	ImPy- β -ImImHp- γ -PyPyPy- β -ImPy
	1634 β) 5'-W G C A G G A W-3'	ImPy- β -ImImPy- γ -HpPyPy- β -ImPy
	1635 β) 5'-W G C A G C T W-3'	ImPy- β -ImPyHp- γ -PyImPy- β -ImPy
	1636 β) 5'-W G C A G C A W-3'	ImPy- β -ImPyPy- γ -HpImPy- β -ImPy
	1637 β) 5'-W G C A G G G W-3'	ImPy- β -ImImIm- γ -PyPyPy- β -ImPy
	1638 β) 5'-W G C A G G C W-3'	ImPy- β -ImImPy- γ -ImPyPy- β -ImPy
	1639 β) 5'-W G C A G C G W-3'	ImPy- β -ImPyIm- γ -PyImPy- β -ImPy
	1640 β) 5'-W G C A G C C W-3'	ImPy- β -ImPyPy- γ -ImImPy- β -ImPy
20	1641 β) 5'-W G C A C T T W-3'	ImPy- β -PyHpHp- γ -PyPyIm- β -ImPy
	1642 β) 5'-W G C A C T A W-3'	ImPy- β -PyHpPy- γ -HpPyIm- β -ImPy
	1643 β) 5'-W G C A C T G W-3'	ImPy- β -PyHpIm- γ -PyPyIm- β -ImPy
	1644 β) 5'-W G C A C T C W-3'	ImPy- β -PyHpPy- γ -ImPyIm- β -ImPy
	1645 β) 5'-W G C A C A T W-3'	ImPy- β -PyPyHp- γ -PyHpIm- β -ImPy
25	1646 β) 5'-W G C A C A A W-3'	ImPy- β -PyPyPy- γ -HpHpIm- β -ImPy
	1647 β) 5'-W G C A C A G W-3'	ImPy- β -PyPyIm- γ -PyHpIm- β -ImPy
	1648 β) 5'-W G C A C A C W-3'	ImPy- β -PyPyPy- γ -ImHpIm- β -ImPy
	1649 β) 5'-W G C A C G T W-3'	ImPy- β -PyImHp- γ -PyPyIm- β -ImPy
	1650 β) 5'-W G C A C G A W-3'	ImPy- β -PyImPy- γ -HpPyIm- β -ImPy
30	1651 β) 5'-W G C A C C T W-3'	ImPy- β -PyPyHp- γ -PyImIm- β -ImPy
	1652 β) 5'-W G C A C C A W-3'	ImPy- β -PyPyPy- γ -HpImIm- β -ImPy
	1653 β) 5'-W G C A C G G W-3'	ImPy- β -PyImIm- γ -PyPyIm- β -ImPy
	1654 β) 5'-W G C A C G C W-3'	ImPy- β -PyImPy- γ -ImPyIm- β -ImPy
	1655 β) 5'-W G C A C C G W-3'	ImPy- β -PyPyIm- γ -PyImIm- β -ImPy
35	1656 β) 5'-W G C A C C C W-3'	ImPy- β -PyPyPy- γ -ImImIm- β -ImPy

TABLE 162: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGCCWNNW-3'

	DNA sequence	aromatic amino acid sequence
	1657 β) 5'-W G C C T T T W-3'	ImPyPy- β -HpHp- γ -PyPy- β -ImImPy
5	1658 β) 5'-W G C C T T A W-3'	ImPyPy- β -HpPy- γ -HpPy- β -ImImPy
	1659 β) 5'-W G C C T T G W-3'	ImPyPy- β -HpIm- γ -PyPy- β -ImImPy
	1660 β) 5'-W G C C T T C W-3'	ImPyPy- β -HpPy- γ -ImPy- β -ImImPy
	1661 β) 5'-W G C C T A T W-3'	ImPyPy- β -PyHp- γ -PyHp- β -ImImPy
	1662 β) 5'-W G C C T A A W-3'	ImPyPy- β -PyPy- γ -HpHp- β -ImImPy
10	1663 β) 5'-W G C C T A G W-3'	ImPyPy- β -PyIm- γ -PyHp- β -ImImPy
	1664 β) 5'-W G C C T A C W-3'	ImPyPy- β -PyPy- γ -ImHp- β -ImImPy
	1665 β) 5'-W G C C T G T W-3'	ImPyPy- β -ImHp- γ -PyPy- β -ImImPy
	1666 β) 5'-W G C C T G A W-3'	ImPyPy- β -ImPy- γ -HpPy- β -ImImPy
	1667 β) 5'-W G C C T G G W-3'	ImPyPy- β -ImIm- γ -PyPy- β -ImImPy
	1668 β) 5'-W G C C T G C W-3'	ImPyPy- β -ImPy- γ -ImPy- β -ImImPy
	1669 β) 5'-W G C C T C T W-3'	ImPyPy- β -PyHp- γ -PyIm- β -ImImPy
	1670 β) 5'-W G C C T C A W-3'	ImPyPy- β -PyPy- γ -HpIm- β -ImImPy
	1671 β) 5'-W G C C T C G W-3'	ImPyPy- β -PyIm- γ -PyIm- β -ImImPy
	1672 β) 5'-W G C C T C C W-3'	ImPyPy- β -PyPy- γ -ImIm- β -ImImPy
20	1673 β) 5'-W G C C A T T W-3'	ImPyPy- β -HpHp- γ -PyPy- β -ImImPy
	1674 β) 5'-W G C C A T A W-3'	ImPyPy- β -HpPy- γ -HpPy- β -ImImPy
	1675 β) 5'-W G C C A T G W-3'	ImPyPy- β -HpIm- γ -PyPy- β -ImImPy
	1676 β) 5'-W G C C A T C W-3'	ImPyPy- β -HpPy- γ -ImPy- β -ImImPy
	1677 β) 5'-W G C C A A T W-3'	ImPyPy- β -PyHp- γ -PyHp- β -ImImPy
25	1678 β) 5'-W G C C A A A W-3'	ImPyPy- β -PyPy- γ -HpHp- β -ImImPy
	1679 β) 5'-W G C C A A G W-3'	ImPyPy- β -PyIm- γ -PyHp- β -ImImPy
	1680 β) 5'-W G C C A A C W-3'	ImPyPy- β -PyPy- γ -ImHp- β -ImImPy
	1681 β) 5'-W G C C A G T W-3'	ImPyPy- β -ImHp- γ -PyPy- β -ImImPy
	1682 β) 5'-W G C C A G A W-3'	ImPyPy- β -ImPy- γ -HpPy- β -ImImPy
30	1683 β) 5'-W G C C A G G W-3'	ImPyPy- β -ImIm- γ -PyPy- β -ImImPy
	1684 β) 5'-W G C C A G C W-3'	ImPyPy- β -ImPy- γ -ImPy- β -ImImPy
	1685 β) 5'-W G C C A C T W-3'	ImPyPy- β -PyHp- γ -PyIm- β -ImImPy
	1686 β) 5'-W G C C A C A W-3'	ImPyPy- β -PyPy- γ -HpIm- β -ImImPy
	1687 β) 5'-W G C C A C G W-3'	ImPyPy- β -PyIm- γ -PyIm- β -ImImPy
35	1688 β) 5'-W G C C A C C W-3'	ImPyPy- β -PyPy- γ -ImIm- β -ImImPy

TABLE 163: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGCCSNW-3'

DNA sequence		aromatic amino acid sequence
5	1689 β) 5'-W G C C G T T W-3'	ImPy- β -ImHpHp- γ -PyPy- β -ImImPy
	1690 β) 5'-W G C C G T A W-3'	ImPy- β -ImHpPy- γ -HpPy- β -ImImPy
	1691 β) 5'-W G C C G T G W-3'	ImPy- β -ImHpIm- γ -PyPy- β -ImImPy
	1692 β) 5'-W G C C G T C W-3'	ImPy- β -ImHpPy- γ -ImPy- β -ImImPy
	1693 β) 5'-W G C C G A T W-3'	ImPy- β -ImPyHp- γ -PyHp- β -ImImPy
	1694 β) 5'-W G C C G A A W-3'	ImPy- β -ImPyPy- γ -HpHp- β -ImImPy
10	1695 β) 5'-W G C C G A G W-3'	ImPy- β -ImPyIm- γ -PyHp- β -ImImPy
	1696 β) 5'-W G C C G A C W-3'	ImPy- β -ImPyPy- γ -ImHp- β -ImImPy
	1697 β) 5'-W G C C G G T W-3'	ImPy- β -ImImHp- γ -PyPy- β -ImImPy
	1698 β) 5'-W G C C G G A W-3'	ImPy- β -ImImPy- γ -HpPy- β -ImImPy
	1699 β) 5'-W G C C G C T W-3'	ImPy- β -ImPyHp- γ -PyIm- β -ImImPy
	1700 β) 5'-W G C C G C A W-3'	ImPy- β -ImPyPy- γ -HpIm- β -ImImPy
	1701 β) 5'-W G C C C T T W-3'	ImPy- β -PyHpHp- γ -Py- β -ImImImPy
	1702 β) 5'-W G C C C T A W-3'	ImPy- β -PyHpPy- γ -Hp- β -ImImImPy
	1703 β) 5'-W G C C C T G W-3'	ImPy- β -PyHpIm- γ -Py- β -ImImImPy
	1704 β) 5'-W G C C C T C W-3'	ImPy- β -PyHpPy- γ -Im- β -ImImImPy
20	1705 β) 5'-W G C C C A T W-3'	ImPy- β -PyPyHp- γ -Py- β -ImImImPy
	1706 β) 5'-W G C C C A A W-3'	ImPy- β -PyPyPy- γ -Hp- β -ImImImPy
	1707 β) 5'-W G C C C A G W-3'	ImPy- β -PyPyIm- γ -Py- β -ImImImPy
	1708 β) 5'-W G C C C A C W-3'	ImPy- β -PyPyPy- γ -Im- β -ImImImPy
	1709 β) 5'-W G C C C G T W-3'	ImPy- β -PyImHp- γ -Py- β -ImImImPy
25	1710 β) 5'-W G C C C G A W-3'	ImPy- β -PyImPy- γ -Hp- β -ImImImPy
	G73 β) 5'-W G C C G G G W-3'	ImPy- β -ImImIm- γ -PyPy- β -ImImPy
	G74 β) 5'-W G C C G G C W-3'	ImPy- β -ImImPy- γ -ImPy- β -ImImPy
	G75 β) 5'-W G C C G C G W-3'	ImPy- β -ImPyIm- γ -PyIm- β -ImImPy
	G76 β) 5'-W G C C G C C W-3'	ImPy- β -ImPyPy- γ -ImIm- β -ImImPy
30	G77 β) 5'-W G C C C G G W-3'	ImPy- β -PyImIm- γ -Py- β -ImImImPy
	G78 β) 5'-W G C C C G C W-3'	ImPy- β -PyImPy- γ -Im- β -ImImImPy

TABLE 164: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGAGWNNW-3'

DNA sequence		aromatic amino acid sequence
1713 β)	5'-W G A G T T T W-3'	Im- β -ImHpHpHp- γ -PyPyPyPy- β -Py
1714 β)	5'-W G A G T T A W-3'	Im- β -ImHpHpPy- γ -HpPyPyPy- β -Py
1715 β)	5'-W G A G T T G W-3'	Im- β -ImHpHpIm- γ -PyPyPyPy- β -Py
1716 β)	5'-W G A G T T C W-3'	Im- β -ImHpHpPy- γ -ImPyPyPy- β -Py
1717 β)	5'-W G A G T A T W-3'	Im- β -ImHpPyHp- γ -PyHpPyPy- β -Py
1718 β)	5'-W G A G T A A W-3'	Im- β -ImHpPyPy- γ -HpHpPyPy- β -Py
1719 β)	5'-W G A G T A G W-3'	Im- β -ImHpPyIm- γ -PyHpPyPy- β -Py
1720 β)	5'-W G A G T A C W-3'	Im- β -ImHpPyPy- γ -ImHpPyPy- β -Py
1721 β)	5'-W G A G T G T W-3'	Im- β -ImHpImHp- γ -PyPyPyPy- β -Py
1722 β)	5'-W G A G T G A W-3'	Im- β -ImHpImPy- γ -HpPyPyPy- β -Py
1723 β)	5'-W G A G T G G W-3'	Im- β -ImHpImIm- γ -PyPyPyPy- β -Py
1724 β)	5'-W G A G T G C W-3'	Im- β -ImHpImPy- γ -ImPyPyPy- β -Py
1725 β)	5'-W G A G T C T W-3'	Im- β -ImHpPyHp- γ -PyImPyPy- β -Py
1726 β)	5'-W G A G T C A W-3'	Im- β -ImHpPyPy- γ -HpImPyPy- β -Py
1727 β)	5'-W G A G T C G W-3'	Im- β -ImHpPyIm- γ -PyImPyPy- β -Py
1728 β)	5'-W G A G T C C W-3'	Im- β -ImHpPyPy- γ -ImImPyPy- β -Py
1729 β)	5'-W G A G A T T W-3'	Im- β -ImPyHpHp- γ -PyPyHpPy- β -Py
1730 β)	5'-W G A G A T A W-3'	Im- β -ImPyHpPy- γ -HpPyHpPy- β -Py
1731 β)	5'-W G A G A T G W-3'	Im- β -ImPyHpIm- γ -PyPyHpPy- β -Py
1732 β)	5'-W G A G A T C W-3'	Im- β -ImPyHpPy- γ -ImPyHpPy- β -Py
1733 β)	5'-W G A G A A T W-3'	Im- β -ImPyPyHp- γ -PyHpHpPy- β -Py
1734 β)	5'-W G A G A A A W-3'	Im- β -ImPyPyPy- γ -HpHpHpPy- β -Py
1735 β)	5'-W G A G A A G W-3'	Im- β -ImPyPyIm- γ -PyHpHpPy- β -Py
1736 β)	5'-W G A G A A C W-3'	Im- β -ImPyPyPy- γ -ImHpHpPy- β -Py
1737 β)	5'-W G A G A G T W-3'	Im- β -ImPyImHp- γ -PyPyHpPy- β -Py
1738 β)	5'-W G A G A G A W-3'	Im- β -ImPyImPy- γ -HpPyHpPy- β -Py
1739 β)	5'-W G A G A G G W-3'	Im- β -ImPyImIm- γ -PyPyHpPy- β -Py
1740 β)	5'-W G A G A G C W-3'	Im- β -ImPyImPy- γ -ImPyHpPy- β -Py
1741 β)	5'-W G A G A C T W-3'	Im- β -ImPyPyHp- γ -PyImHpPy- β -Py
1742 β)	5'-W G A G A C A W-3'	Im- β -ImPyPyPy- γ -HpImHpPy- β -Py
1743 β)	5'-W G A G A C G W-3'	Im- β -ImPyPyIm- γ -PyImHpPy- β -Py
1744 β)	5'-W G A G A C C W-3'	Im- β -ImPyPyPy- γ -ImImHpPy- β -Py

TABLE 165: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGAGSNNW-3'

	DNA sequence	aromatic amino acid sequence
	1745 β) 5'-W G A G G T T W-3'	Im- β -ImImHpHp- γ -PyPyPyPy- β -Py
5	1746 β) 5'-W G A G G T A W-3'	Im- β -ImImHpPy- γ -HpPyPyPy- β -Py
	1747 β) 5'-W G A G G T G W-3'	Im- β -ImImHpIm- γ -PyPyPyPy- β -Py
	1748 β) 5'-W G A G G T C W-3'	Im- β -ImImHpPy- γ -ImPyPyPy- β -Py
	1749 β) 5'-W G A G G A T W-3'	Im- β -ImImPyHp- γ -PyHpPyPy- β -Py
	1750 β) 5'-W G A G G A A W-3'	Im- β -ImImPyPy- γ -HpHpPyPy- β -Py
10	1751 β) 5'-W G A G G A G W-3'	Im- β -ImImPyIm- γ -PyHpPyPy- β -Py
	1752 β) 5'-W G A G G A C W-3'	Im- β -ImImPyPy- γ -ImHpPyPy- β -Py
	1753 β) 5'-W G A G G G T W-3'	Im- β -ImImImHp- γ -PyPyPyPy- β -Py
	1754 β) 5'-W G A G G G A W-3'	Im- β -ImImImPy- γ -HpPyPyPy- β -Py
	1755 β) 5'-W G A G G C T W-3'	Im- β -ImImPyHp- γ -PyImPyPy- β -Py
15	1756 β) 5'-W G A G G C A W-3'	Im- β -ImImPyPy- γ -HpImPyPy- β -Py
	1757 β) 5'-W G A G C T T W-3'	Im- β -ImPyHpHp- γ -PyPyImPy- β -Py
	1758 β) 5'-W G A G C T A W-3'	Im- β -ImPyHpPy- γ -HpPyImPy- β -Py
	1759 β) 5'-W G A G C T G W-3'	Im- β -ImPyHpIm- γ -PyPyImPy- β -Py
	1760 β) 5'-W G A G C T C W-3'	Im- β -ImPyHpPy- γ -ImPyImPy- β -Py
20	1761 β) 5'-W G A G C A T W-3'	Im- β -ImPyPyHp- γ -PyHpImPy- β -Py
	1762 β) 5'-W G A G C A A W-3'	Im- β -ImPyPyPy- γ -HpHpImPy- β -Py
	1763 β) 5'-W G A G C A G W-3'	Im- β -ImPyPyIm- γ -PyHpImPy- β -Py
	1764 β) 5'-W G A G C A C W-3'	Im- β -ImPyPyPy- γ -ImHpImPy- β -Py
	1765 β) 5'-W G A G C G T W-3'	Im- β -ImPyImHp- γ -PyPyImPy- β -Py
25	1766 β) 5'-W G A G C G A W-3'	Im- β -ImPyImPy- γ -HpPyImPy- β -Py
	1767 β) 5'-W G A G C C T W-3'	Im- β -ImPyPyHp- γ -PyImImPy- β -Py
	1768 β) 5'-W G A G C C A W-3'	Im- β -ImPyPyPy- γ -HpImImPy- β -Py
	1769 β) 5'-W G A G G G G W-3'	Im- β -ImImImIm- γ -PyPyPyPy- β -Py
	1770 β) 5'-W G A G G G C W-3'	Im- β -ImImImPy- γ -ImPyPyPy- β -Py
30	1771 β) 5'-W G A G G C G W-3'	Im- β -ImImPyIm- γ -PyImPyPy- β -Py
	1772 β) 5'-W G A G G C C W-3'	Im- β -ImImPyPy- γ -ImImPyPy- β -Py
	1773 β) 5'-W G A G C G G W-3'	Im- β -ImPyImIm- γ -PyPyImPy- β -Py
	1774 β) 5'-W G A G C G C W-3'	Im- β -ImPyImPy- γ -ImPyImPy- β -Py
	1775 β) 5'-W G A G C C G W-3'	Im- β -ImPyPyIm- γ -PyImImPy- β -Py
35	1776 β) 5'-W G A G C C C W-3'	Im- β -ImPyPyPy- γ -ImImImPy- β -Py

TABLE 166: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGATWNNW-3'

DNA sequence		aromatic amino acid sequence
1777 β)	5'-W G A T T T T W-3'	ImPy- β -HpHpHp- γ -PyPyPy- β -HpPy
1778 β)	5'-W G A T T T A W-3'	ImPy- β -HpHpPy- γ -HpPyPy- β -HpPy
1779 β)	5'-W G A T T T G W-3'	ImPy- β -HpHpIm- γ -PyPyPy- β -HpPy
1780 β)	5'-W G A T T T C W-3'	ImPy- β -HpHpPy- γ -ImPyPy- β -HpPy
1781 β)	5'-W G A T T A T W-3'	ImPy- β -HpPyHp- γ -PyHpPy- β -HpPy
1782 β)	5'-W G A T T A A W-3'	ImPy- β -HpPyPy- γ -HpHpPy- β -HpPy
1783 β)	5'-W G A T T A G W-3'	ImPy- β -HpPyIm- γ -PyHpPy- β -HpPy
1784 β)	5'-W G A T T A C W-3'	ImPy- β -HpPyPy- γ -ImHpPy- β -HpPy
1785 β)	5'-W G A T T G T W-3'	ImPy- β -HpImHp- γ -PyPyPy- β -HpPy
1786 β)	5'-W G A T T G A W-3'	ImPy- β -HpImPy- γ -HpPyPy- β -HpPy
1787 β)	5'-W G A T T G G W-3'	ImPy- β -HpImIm- γ -PyPyPy- β -HpPy
1788 β)	5'-W G A T T G C W-3'	ImPy- β -HpImPy- γ -ImPyPy- β -HpPy
1789 β)	5'-W G A T T C T W-3'	ImPy- β -HpPyHp- γ -PyImPy- β -HpPy
1790 β)	5'-W G A T T C A W-3'	ImPy- β -HpPyPy- γ -HpImPy- β -HpPy
1791 β)	5'-W G A T T C G W-3'	ImPy- β -HpPyIm- γ -PyImPy- β -HpPy
1792 β)	5'-W G A T T C C W-3'	ImPy- β -HpPyPy- γ -ImImPy- β -HpPy
1793 β)	5'-W G A T A T T W-3'	ImPy- β -PyHpHp- γ -PyPyHp- β -HpPy
1794 β)	5'-W G A T A T A W-3'	ImPy- β -PyHpPy- γ -HpPyHp- β -HpPy
1795 β)	5'-W G A T A T G W-3'	ImPy- β -PyHpIm- γ -PyPyHp- β -HpPy
1796 β)	5'-W G A T A T C W-3'	ImPy- β -PyHpPy- γ -ImPyHp- β -HpPy
1797 β)	5'-W G A T A A T W-3'	ImPy- β -PyPyHp- γ -PyHpHp- β -HpPy
1798 β)	5'-W G A T A A A W-3'	ImPy- β -PyPyPy- γ -HpHpHp- β -HpPy
1799 β)	5'-W G A T A A G W-3'	ImPy- β -PyPyIm- γ -PyHpHp- β -HpPy
1800 β)	5'-W G A T A A C W-3'	ImPy- β -PyPyPy- γ -ImHpHp- β -HpPy
1801 β)	5'-W G A T A G T W-3'	ImPy- β -PyImHp- γ -PyPyHp- β -HpPy
1802 β)	5'-W G A T A G A W-3'	ImPy- β -PyImPy- γ -HpPyHp- β -HpPy
1803 β)	5'-W G A T A G G W-3'	ImPy- β -PyImIm- γ -PyPyHp- β -HpPy
1804 β)	5'-W G A T A G C W-3'	ImPy- β -PyImPy- γ -ImPyHp- β -HpPy
1805 β)	5'-W G A T A C T W-3'	ImPy- β -PyPyHp- γ -PyImHp- β -HpPy
1806 β)	5'-W G A T A C A W-3'	ImPy- β -PyPyPy- γ -HpImHp- β -HpPy
1807 β)	5'-W G A T A C G W-3'	ImPy- β -PyPyIm- γ -PyImHp- β -HpPy
1808 β)	5'-W G A T A C C W-3'	ImPy- β -PyPyPy- γ -ImImHp- β -HpPy

TABLE 167: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGATSNW-3'

	DNA sequence	aromatic amino acid sequence
	1809 β) 5'-W G A T G T T W-3'	ImPy- β -ImHpHp- γ -PyPyPy- β -HpPy
5	1810 β) 5'-W G A T G T A W-3'	ImPy- β -ImHpPy- γ -HpPyPy- β -HpPy
	1811 β) 5'-W G A T G T G W-3'	ImPy- β -ImHpIm- γ -PyPyPy- β -HpPy
	1812 β) 5'-W G A T G T C W-3'	ImPy- β -ImHpPy- γ -ImPyPy- β -HpPy
	1813 β) 5'-W G A T G A T W-3'	ImPy- β -ImPyHp- γ -PyHpPy- β -HpPy
	1814 β) 5'-W G A T G A A W-3'	ImPy- β -ImPyPy- γ -HpHpPy- β -HpPy
10	1815 β) 5'-W G A T G A G W-3'	ImPy- β -ImPyIm- γ -PyHpPy- β -HpPy
	1816 β) 5'-W G A T G A C W-3'	ImPy- β -ImPyPy- γ -ImHpPy- β -HpPy
	1817 β) 5'-W G A T G G T W-3'	ImPy- β -ImImHp- γ -PyPyPy- β -HpPy
	1818 β) 5'-W G A T G G A W-3'	ImPy- β -ImImPy- γ -HpPyPy- β -HpPy
	1819 β) 5'-W G A T G C T W-3'	ImPy- β -ImPyHp- γ -PyImPy- β -HpPy
15	1820 β) 5'-W G A T G C A W-3'	ImPy- β -ImPyPy- γ -HpImPy- β -HpPy
	1821 β) 5'-W G A T G G G W-3'	ImPy- β -ImImIm- γ -PyPyPy- β -HpPy
	1822 β) 5'-W G A T G G C W-3'	ImPy- β -ImImPy- γ -ImPyPy- β -HpPy
	1823 β) 5'-W G A T G C G W-3'	ImPy- β -ImPyIm- γ -PyImPy- β -HpPy
	1824 β) 5'-W G A T G C C W-3'	ImPy- β -ImPyPy- γ -ImImPy- β -HpPy
20	1825 β) 5'-W G A T C T T W-3'	ImPy- β -PyHpHp- γ -PyPyIm- β -HpPy
	1826 β) 5'-W G A T C T A W-3'	ImPy- β -PyHpPy- γ -HpPyIm- β -HpPy
	1827 β) 5'-W G A T C T G W-3'	ImPy- β -PyHpIm- γ -PyPyIm- β -HpPy
	1828 β) 5'-W G A T C T C W-3'	ImPy- β -PyHpPy- γ -ImPyIm- β -HpPy
	1829 β) 5'-W G A T C A T W-3'	ImPy- β -PyPyHp- γ -PyHpIm- β -HpPy
25	1830 β) 5'-W G A T C A A W-3'	ImPy- β -PyPyPy- γ -HpHpIm- β -HpPy
	1831 β) 5'-W G A T C A G W-3'	ImPy- β -PyPyIm- γ -PyHpIm- β -HpPy
	1832 β) 5'-W G A T C A C W-3'	ImPy- β -PyPyPy- γ -ImHpIm- β -HpPy
	1833 β) 5'-W G A T C G T W-3'	ImPy- β -PyImHp- γ -PyPyIm- β -HpPy
	1834 β) 5'-W G A T C G A W-3'	ImPy- β -PyImPy- γ -HpPyIm- β -HpPy
30	1835 β) 5'-W G A T C C T W-3'	ImPy- β -PyPyHp- γ -PyImIm- β -HpPy
	1836 β) 5'-W G A T C C A W-3'	ImPy- β -PyPyPy- γ -HpImIm- β -HpPy
	1837 β) 5'-W G A T C G G W-3'	ImPy- β -PyImIm- γ -PyPyIm- β -HpPy
	1838 β) 5'-W G A T C G C W-3'	ImPy- β -PyImPy- γ -ImPyIm- β -HpPy
	1839 β) 5'-W G A T C C G W-3'	ImPy- β -PyPyIm- γ -PyImIm- β -HpPy
35	1840 β) 5'-W G A T C C C W-3'	ImPy- β -PyPyPy- γ -ImImIm- β -HpPy

TABLE 168: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGAAWNNW-3'

	DNA sequence	aromatic amino acid sequence
	1841 β) 5'-W G A A T T T W-3'	ImPy- β -HpHpHp- γ -PyPyPy- β -HpPy
5	1842 β) 5'-W G A A T T A W-3'	ImPy- β -HpHpPy- γ -HpPyPy- β -HpPy
	1843 β) 5'-W G A A T T G W-3'	ImPy- β -HpHpIm- γ -PyPyPy- β -HpPy
	1844 β) 5'-W G A A T T C W-3'	ImPy- β -HpHpPy- γ -ImPyPy- β -HpPy
	1845 β) 5'-W G A A T A T W-3'	ImPy- β -HpPyHp- γ -PyHpPy- β -HpPy
	1846 β) 5'-W G A A T A A W-3'	ImPy- β -HpPyPy- γ -HpHpPy- β -HpPy
10	1847 β) 5'-W G A A T A G W-3'	ImPy- β -HpPyIm- γ -PyHpPy- β -HpPy
	1848 β) 5'-W G A A T A C W-3'	ImPy- β -HpPyPy- γ -ImHpPy- β -HpPy
	1849 β) 5'-W G A A T G T W-3'	ImPy- β -HpImHp- γ -PyPyPy- β -HpPy
	1850 β) 5'-W G A A T G A W-3'	ImPy- β -HpImPy- γ -HpPyPy- β -HpPy
	1851 β) 5'-W G A A T G G W-3'	ImPy- β -HpImIm- γ -PyPyPy- β -HpPy
	1852 β) 5'-W G A A T G C W-3'	ImPy- β -HpImPy- γ -ImPyPy- β -HpPy
	1853 β) 5'-W G A A T C T W-3'	ImPy- β -HpPyHp- γ -PyImPy- β -HpPy
	1854 β) 5'-W G A A T C A W-3'	ImPy- β -HpPyPy- γ -HpImPy- β -HpPy
	1855 β) 5'-W G A A T C G W-3'	ImPy- β -HpPyIm- γ -PyImPy- β -HpPy
	1856 β) 5'-W G A A T C C W-3'	ImPy- β -HpPyPy- γ -ImImPy- β -HpPy
20	1857 β) 5'-W G A A A T T W-3'	ImPy- β -PyHpHp- γ -PyPyHp- β -HpPy
	1858 β) 5'-W G A A A T A W-3'	ImPy- β -PyHpPy- γ -HpPyHp- β -HpPy
	1869 β) 5'-W G A A A T G W-3'	ImPy- β -PyHpIm- γ -PyPyHp- β -HpPy
	1860 β) 5'-W G A A A T C W-3'	ImPy- β -PyHpPy- γ -ImPyHp- β -HpPy
	1861 β) 5'-W G A A A A T W-3'	ImPy- β -PyPyHp- γ -PyHpHp- β -HpPy
25	1862 β) 5'-W G A A A A W-3'	ImPy- β -PyPyPy- γ -HpHpHp- β -HpPy
	1863 β) 5'-W G A A A A G W-3'	ImPy- β -PyPyIm- γ -PyHpHp- β -HpPy
	1864 β) 5'-W G A A A A C W-3'	ImPy- β -PyPyPy- γ -ImHpHp- β -HpPy
	1865 β) 5'-W G A A A G T W-3'	ImPy- β -PyImHp- γ -PyPyHp- β -HpPy
	1866 β) 5'-W G A A A G A W-3'	ImPy- β -PyImPy- γ -HpPyHp- β -HpPy
30	1867 β) 5'-W G A A A G G W-3'	ImPy- β -PyImIm- γ -PyPyHp- β -HpPy
	1868 β) 5'-W G A A A G C W-3'	ImPy- β -PyImPy- γ -ImPyHp- β -HpPy
	1869 β) 5'-W G A A A C T W-3'	ImPy- β -PyPyHp- γ -PyImHp- β -HpPy
	1870 β) 5'-W G A A A C A W-3'	ImPy- β -PyPyPy- γ -HpImHp- β -HpPy
	1871 β) 5'-W G A A A C G W-3'	ImPy- β -PyPyIm- γ -PyImHp- β -HpPy
35	1872 β) 5'-W G A A A C C W-3'	ImPy- β -PyPyPy- γ -ImImHp- β -HpPy

TABLE 169: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGAASNNW-3'

	DNA sequence	aromatic amino acid sequence
	1873 β) 5'-W G A A G T T W-3'	ImPy- β -ImHpHp- γ -PyPyPy- β -HpPy
5	1874 β) 5'-W G A A G T A W-3'	ImPy- β -ImHpPy- γ -HpPyPy- β -HpPy
	1875 β) 5'-W G A A G T G W-3'	ImPy- β -ImHpIm- γ -PyPyPy- β -HpPy
	1876 β) 5'-W G A A G T C W-3'	ImPy- β -ImHpPy- γ -ImPyPy- β -HpPy
	1877 β) 5'-W G A A G A T W-3'	ImPy- β -ImPyHp- γ -PyHpPy- β -HpPy
	1878 β) 5'-W G A A G A A W-3'	ImPy- β -ImPyPy- γ -HpHpPy- β -HpPy
10	1879 β) 5'-W G A A G A G W-3'	ImPy- β -ImPyIm- γ -PyHpPy- β -HpPy
	1880 β) 5'-W G A A G A C W-3'	ImPy- β -ImPyPy- γ -ImHpPy- β -HpPy
	1881 β) 5'-W G A A G G T W-3'	ImPy- β -ImImHp- γ -PyPyPy- β -HpPy
	1882 β) 5'-W G A A G G A W-3'	ImPy- β -ImImPy- γ -HpPyPy- β -HpPy
	1883 β) 5'-W G A A G C T W-3'	ImPy- β -ImPyHp- γ -PyImPy- β -HpPy
	1884 β) 5'-W G A A G C A W-3'	ImPy- β -ImPyPy- γ -HpImPy- β -HpPy
	1885 β) 5'-W G A A G G G W-3'	ImPy- β -ImImIm- γ -PyPyPy- β -HpPy
	1886 β) 5'-W G A A G G C W-3'	ImPy- β -ImImPy- γ -ImPyPy- β -HpPy
	1887 β) 5'-W G A A G C G W-3'	ImPy- β -ImPyIm- γ -PyImPy- β -HpPy
	1888 β) 5'-W G A A G C C W-3'	ImPy- β -ImPyPy- γ -ImImPy- β -HpPy
20	1889 β) 5'-W G A A C T T W-3'	ImPy- β -PyHpHp- γ -PyPyIm- β -HpPy
	1890 β) 5'-W G A A C T A W-3'	ImPy- β -PyHpPy- γ -HpPyIm- β -HpPy
	1891 β) 5'-W G A A C T G W-3'	ImPy- β -PyHpIm- γ -PyPyIm- β -HpPy
	1892 β) 5'-W G A A C T C W-3'	ImPy- β -PyHpPy- γ -ImPyIm- β -HpPy
	1893 β) 5'-W G A A C A T W-3'	ImPy- β -PyPyHp- γ -PyHpIm- β -HpPy
25	1894 β) 5'-W G A A C A A W-3'	ImPy- β -PyPyPy- γ -HpHpIm- β -HpPy
	1895 β) 5'-W G A A C A G W-3'	ImPy- β -PyPyIm- γ -PyHpIm- β -HpPy
	1896 β) 5'-W G A A C A C W-3'	ImPy- β -PyPyPy- γ -ImHpIm- β -HpPy
	1897 β) 5'-W G A A C G T W-3'	ImPy- β -PyImHp- γ -PyPyIm- β -HpPy
	1898 β) 5'-W G A A C G A W-3'	ImPy- β -PyImPy- γ -HpPyIm- β -HpPy
30	1899 β) 5'-W G A A C C T W-3'	ImPy- β -PyPyHp- γ -PyImIm- β -HpPy
	1900 β) 5'-W G A A C C A W-3'	ImPy- β -PyPyPy- γ -HpImIm- β -HpPy
	1901 β) 5'-W G A A C G G W-3'	ImPy- β -PyImIm- γ -PyPyIm- β -HpPy
	1902 β) 5'-W G A A C G C W-3'	ImPy- β -PyImPy- γ -ImPyIm- β -HpPy
	1903 β) 5'-W G A A C C G W-3'	ImPy- β -PyPyIm- γ -PyImIm- β -HpPy
35	1904 β) 5'-W G A A C C C W-3'	ImPy- β -PyPyPy- γ -ImImIm- β -HpPy

TABLE 170: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGACWNNW-3'

DNA sequence		aromatic amino acid sequence
5	1905 β) 5'-W G A C T T T W-3'	ImPyPy- β -HpHp- γ -PyPy- β -ImHpPy
	1906 β) 5'-W G A C T T A W-3'	ImPyPy- β -HpPy- γ -HpPy- β -ImHpPy
	1907 β) 5'-W G A C T T G W-3'	ImPyPy- β -HpIm- γ -PyPy- β -ImHpPy
	1908 β) 5'-W G A C T T C W-3'	ImPyPy- β -HpPy- γ -ImPy- β -ImHpPy
	1909 β) 5'-W G A C T A T W-3'	ImPyPy- β -PyHp- γ -PyHp- β -ImHpPy
	1910 β) 5'-W G A C T A A W-3'	ImPyPy- β -PyPy- γ -HpHp- β -ImHpPy
10	1911 β) 5'-W G A C T A G W-3'	ImPyPy- β -PyIm- γ -PyHp- β -ImHpPy
	1912 β) 5'-W G A C T A C W-3'	ImPyPy- β -PyPy- γ -ImHp- β -ImHpPy
	1913 β) 5'-W G A C T G T W-3'	ImPyPy- β -ImHp- γ -PyPy- β -ImHpPy
	1914 β) 5'-W G A C T G A W-3'	ImPyPy- β -ImPy- γ -HpPy- β -ImHpPy
	1915 β) 5'-W G A C T G G W-3'	ImPyPy- β -ImIm- γ -PyPy- β -ImHpPy
15	1916 β) 5'-W G A C T G C W-3'	ImPyPy- β -ImPy- γ -ImPy- β -ImHpPy
	1917 β) 5'-W G A C T C T W-3'	ImPyPy- β -PyHp- γ -PyIm- β -ImHpPy
	1918 β) 5'-W G A C T C A W-3'	ImPyPy- β -PyPy- γ -HpIm- β -ImHpPy
	1919 β) 5'-W G A C T C G W-3'	ImPyPy- β -PyIm- γ -PyIm- β -ImHpPy
	1920 β) 5'-W G A C T C C W-3'	ImPyPy- β -PyPy- γ -ImIm- β -ImHpPy
20	1921 β) 5'-W G A C A T T W-3'	ImPyPy- β -HpHp- γ -PyPy- β -ImHpPy
	1922 β) 5'-W G A C A T A W-3'	ImPyPy- β -HpPy- γ -HpPy- β -ImHpPy
	1923 β) 5'-W G A C A T G W-3'	ImPyPy- β -HpIm- γ -PyPy- β -ImHpPy
	1924 β) 5'-W G A C A T C W-3'	ImPyPy- β -HpPy- γ -ImPy- β -ImHpPy
	1925 β) 5'-W G A C A A T W-3'	ImPyPy- β -PyHp- γ -PyHp- β -ImHpPy
25	1926 β) 5'-W G A C A A A W-3'	ImPyPy- β -PyPy- γ -HpHp- β -ImHpPy
	1927 β) 5'-W G A C A A G W-3'	ImPyPy- β -PyIm- γ -PyHp- β -ImHpPy
	1928 β) 5'-W G A C A A C W-3'	ImPyPy- β -PyPy- γ -ImHp- β -ImHpPy
	1929 β) 5'-W G A C A G T W-3'	ImPyPy- β -ImHp- γ -PyPy- β -ImHpPy
	1930 β) 5'-W G A C A G A W-3'	ImPyPy- β -ImPy- γ -HpPy- β -ImHpPy
30	1931 β) 5'-W G A C A G G W-3'	ImPyPy- β -ImIm- γ -PyPy- β -ImHpPy
	1932 β) 5'-W G A C A G C W-3'	ImPyPy- β -ImPy- γ -ImPy- β -ImHpPy
	1933 β) 5'-W G A C A C T W-3'	ImPyPy- β -PyHp- γ -PyIm- β -ImHpPy
	1934 β) 5'-W G A C A C A W-3'	ImPyPy- β -PyPy- γ -HpIm- β -ImHpPy
	1935 β) 5'-W G A C A C G W-3'	ImPyPy- β -PyIm- γ -PyIm- β -ImHpPy
35	1936 β) 5'-W G A C A C C W-3'	ImPyPy- β -PyPy- γ -ImIm- β -ImHpPy

TABLE 171: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGACSNW-3'

DNA sequence		aromatic amino acid sequence
1937 β)	5'-W G A C G T T W-3'	ImPy- β -ImHpHp- γ -PyPy- β -ImHpPy
1938 β)	5'-W G A C G T A W-3'	ImPy- β -ImHpPy- γ -HpPy- β -ImHpPy
1939 β)	5'-W G A C G T G W-3'	ImPy- β -ImHpIm- γ -PyPy- β -ImHpPy
1940 β)	5'-W G A C G T C W-3'	ImPy- β -ImHpPy- γ -ImPy- β -ImHpPy
1941 β)	5'-W G A C G A T W-3'	ImPy- β -ImPyHp- γ -PyHp- β -ImHpPy
1942 β)	5'-W G A C G A A W-3'	ImPy- β -ImPyPy- γ -HpHp- β -ImHpPy
1943 β)	5'-W G A C G A G W-3'	ImPy- β -ImPyIm- γ -PyHp- β -ImHpPy
1944 β)	5'-W G A C G A C W-3'	ImPy- β -ImPyPy- γ -ImHp- β -ImHpPy
1945 β)	5'-W G A C G G T W-3'	ImPy- β -ImImHp- γ -PyPy- β -ImHpPy
1946 β)	5'-W G A C G G A W-3'	ImPy- β -ImImPy- γ -HpPy- β -ImHpPy
1947 β)	5'-W G A C G C T W-3'	ImPy- β -ImPyHp- γ -PyIm- β -ImHpPy
1948 β)	5'-W G A C G C A W-3'	ImPy- β -ImPyPy- γ -HpIm- β -ImHpPy
1949 β)	5'-W G A C C T T W-3'	ImPy- β -PyHpHp- γ -Py- β -ImImHpPy
1950 β)	5'-W G A C C T A W-3'	ImPy- β -PyHpPy- γ -Hp- β -ImImHpPy
1951 β)	5'-W G A C C T G W-3'	ImPy- β -PyHpIm- γ -Py- β -ImImHpPy
1952 β)	5'-W G A C C T C W-3'	ImPy- β -PyHpPy- γ -Im- β -ImImHpPy
1953 β)	5'-W G A C C A T W-3'	ImPy- β -PyPyHp- γ -Py- β -ImImHpPy
1954 β)	5'-W G A C C A A W-3'	ImPy- β -PyPyPy- γ -Hp- β -ImImHpPy
1955 β)	5'-W G A C C A G W-3'	ImPy- β -PyPyIm- γ -Py- β -ImImHpPy
1956 β)	5'-W G A C C A C W-3'	ImPy- β -PyPyPy- γ -Im- β -ImImHpPy
1957 β)	5'-W G A C C G T W-3'	ImPy- β -PyImHp- γ -Py- β -ImImHpPy
1958 β)	5'-W G A C C G A W-3'	ImPy- β -PyImPy- γ -Hp- β -ImImHpPy
1959 β)	5'-W G A C C C T W-3'	ImPy- β -PyPyHp- γ -PyImImIm- β -Py
1960 β)	5'-W G A C C C A W-3'	ImPy- β -PyPyPy- γ -HpImImIm- β -Py
1961 β)	5'-W G A C G G G W-3'	ImPy- β -ImImIm- γ -PyPy- β -ImHpPy
1962 β)	5'-W G A C G G C W-3'	ImPy- β -ImImPy- γ -ImPy- β -ImHpPy
1963 β)	5'-W G A C G C G W-3'	ImPy- β -ImPyIm- γ -PyIm- β -ImHpPy
1964 β)	5'-W G A C G C C W-3'	ImPy- β -ImPyPy- γ -ImIm- β -ImHpPy
1965 β)	5'-W G A C C G G W-3'	ImPy- β -PyImIm- γ -Py- β -ImImHpPy
1966 β)	5'-W G A C C G C W-3'	ImPy- β -PyImPy- γ -Im- β -ImImHpPy
1967 β)	5'-W G A C C C G W-3'	ImPy- β -PyPyIm- γ -PyImImIm- β -Py
1968 β)	5'-W G A C C C C W-3'	ImPy- β -PyPyPy- γ -ImImImIm- β -Py

TABLE 172: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGTGWNNW-3'

DNA sequence		aromatic amino acid sequence
1969 β)	5'-W G T G T T T W-3'	Im- β -ImHpHpHp- γ -PyPyPyPy- β -Py
1970 β)	5'-W G T G T T A W-3'	Im- β -ImHpHpPy- γ -HpPyPyPy- β -Py
1971 β)	5'-W G T G T T G W-3'	Im- β -ImHpHpIm- γ -PyPyPyPy- β -Py
1972 β)	5'-W G T G T T C W-3'	Im- β -ImHpHpPy- γ -ImPyPyPy- β -Py
1973 β)	5'-W G T G T A T W-3'	Im- β -ImHpPyHp- γ -PyHpPyPy- β -Py
1974 β)	5'-W G T G T A A W-3'	Im- β -ImHpPyPy- γ -HpHpPyPy- β -Py
1975 β)	5'-W G T G T A G W-3'	Im- β -ImHpPyIm- γ -PyHpPyPy- β -Py
1976 β)	5'-W G T G T A C W-3'	Im- β -ImHpPyPy- γ -ImHpPyPy- β -Py
1977 β)	5'-W G T G T G T W-3'	Im- β -ImHpImHp- γ -PyPyPyPy- β -Py
1978 β)	5'-W G T G T G A W-3'	Im- β -ImHpImPy- γ -HpPyPyPy- β -Py
1979 β)	5'-W G T G T G G W-3'	Im- β -ImHpImIm- γ -PyPyPyPy- β -Py
1980 β)	5'-W G T G T G C W-3'	Im- β -ImHpImPy- γ -ImPyPyPy- β -Py
1981 β)	5'-W G T G T C T W-3'	Im- β -ImHpPyHp- γ -PyImPyPy- β -Py
1982 β)	5'-W G T G T C A W-3'	Im- β -ImHpPyPy- γ -HpImPyPy- β -Py
1983 β)	5'-W G T G T C G W-3'	Im- β -ImHpPyIm- γ -PyImPyPy- β -Py
1984 β)	5'-W G T G T C C W-3'	Im- β -ImHpPyPy- γ -ImImPyPy- β -Py
1985 β)	5'-W G T G A T T W-3'	Im- β -ImPyHpHp- γ -PyPyHpPy- β -Py
1986 β)	5'-W G T G A T A W-3'	Im- β -ImPyHpPy- γ -HpPyHpPy- β -Py
1987 β)	5'-W G T G A T G W-3'	Im- β -ImPyHpIm- γ -PyPyHpPy- β -Py
1988 β)	5'-W G T G A T C W-3'	Im- β -ImPyHpPy- γ -ImPyHpPy- β -Py
1989 β)	5'-W G T G A A T W-3'	Im- β -ImPyPyHp- γ -PyHpHpPy- β -Py
1990 β)	5'-W G T G A A A W-3'	Im- β -ImPyPyPy- γ -HpHpHpPy- β -Py
1991 β)	5'-W G T G A A G W-3'	Im- β -ImPyPyIm- γ -PyHpHpPy- β -Py
1992 β)	5'-W G T G A A C W-3'	Im- β -ImPyPyPy- γ -ImHpHpPy- β -Py
1993 β)	5'-W G T G A G T W-3'	Im- β -ImPyImHp- γ -PyPyHpPy- β -Py
1994 β)	5'-W G T G A G A W-3'	Im- β -ImPyImPy- γ -HpPyHpPy- β -Py
1995 β)	5'-W G T G A G G W-3'	Im- β -ImPyImIm- γ -PyPyHpPy- β -Py
1996 β)	5'-W G T G A G C W-3'	Im- β -ImPyImPy- γ -ImPyHpPy- β -Py
1997 β)	5'-W G T G A C T W-3'	Im- β -ImPyPyHp- γ -PyImHpPy- β -Py
1998 β)	5'-W G T G A C A W-3'	Im- β -ImPyPyPy- γ -HpImHpPy- β -Py
1999 β)	5'-W G T G A C G W-3'	Im- β -ImPyPyIm- γ -PyImHpPy- β -Py
2000 β)	5'-W G T G A C C W-3'	Im- β -ImPyPyPy- γ -ImImHpPy- β -Py

TABLE 173: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGTGSNNW-3'

	DNA sequence	aromatic amino acid sequence
	2001 β) 5'-W G T G G T T W-3'	Im- β -ImImHpHp- γ -PyPyPyPy- β -Py
5	2002 β) 5'-W G T G G T A W-3'	Im- β -ImImHpPy- γ -HpPyPyPy- β -Py
	2003 β) 5'-W G T G G T G W-3'	Im- β -ImImHpIm- γ -PyPyPyPy- β -Py
	2004 β) 5'-W G T G G T C W-3'	Im- β -ImImHpPy- γ -ImPyPyPy- β -Py
	2005 β) 5'-W G T G G A T W-3'	Im- β -ImImPyHp- γ -PyHpPyPy- β -Py
	2006 β) 5'-W G T G G A A W-3'	Im- β -ImImPyPy- γ -HpHpPyPy- β -Py
10	2007 β) 5'-W G T G G A G W-3'	Im- β -ImImPyIm- γ -PyHpPyPy- β -Py
	2008 β) 5'-W G T G G A C W-3'	Im- β -ImImPyPy- γ -ImHpPyPy- β -Py
	2009 β) 5'-W G T G G G T W-3'	Im- β -ImImImHp- γ -PyPyPyPy- β -Py
	2010 β) 5'-W G T G G G A W-3'	Im- β -ImImImPy- γ -HpPyPyPy- β -Py
	2011 β) 5'-W G T G G C T W-3'	Im- β -ImImPyHp- γ -PyImPyPy- β -Py
	2012 β) 5'-W G T G G C A W-3'	Im- β -ImImPyPy- γ -HpImPyPy- β -Py
	2013 β) 5'-W G T G C T T W-3'	Im- β -ImPyHpHp- γ -PyPyImPy- β -Py
	2014 β) 5'-W G T G C T A W-3'	Im- β -ImPyHpPy- γ -HpPyImPy- β -Py
	2015 β) 5'-W G T G C T G W-3'	Im- β -ImPyHpIm- γ -PyPyImPy- β -Py
	2016 β) 5'-W G T G C T C W-3'	Im- β -ImPyHpPy- γ -ImPyImPy- β -Py
20	2017 β) 5'-W G T G C A T W-3'	Im- β -ImPyPyHp- γ -PyHpImPy- β -Py
	2018 β) 5'-W G T G C A A W-3'	Im- β -ImPyPyPy- γ -HpHpImPy- β -Py
	2019 β) 5'-W G T G C A G W-3'	Im- β -ImPyPyIm- γ -PyHpImPy- β -Py
	2020 β) 5'-W G T G C A C W-3'	Im- β -ImPyPyPy- γ -ImHpImPy- β -Py
	2021 β) 5'-W G T G C G T W-3'	Im- β -ImPyImHp- γ -PyPyImPy- β -Py
25	2022 β) 5'-W G T G C G A W-3'	Im- β -ImPyImPy- γ -HpPyImPy- β -Py
	2023 β) 5'-W G T G C C T W-3'	Im- β -ImPyPyHp- γ -PyImImPy- β -Py
	2024 β) 5'-W G T G C C A W-3'	Im- β -ImPyPyPy- γ -HpImImPy- β -Py
	2025 β) 5'-W G T G G G G W-3'	Im- β -ImImImIm- γ -PyPyPyPy- β -Py
	2026 β) 5'-W G T G G G C W-3'	Im- β -ImImImPy- γ -ImPyPyPy- β -Py
30	2027 β) 5'-W G T G G C G W-3'	Im- β -ImImPyIm- γ -PyImPyPy- β -Py
	2028 β) 5'-W G T G G C C W-3'	Im- β -ImImPyPy- γ -ImImPyPy- β -Py
	2029 β) 5'-W G T G C G G W-3'	Im- β -mPyImIm- γ -PyPyImPy- β -Py
	2030 β) 5'-W G T G C G C W-3'	Im- β -ImPyImPy- γ -ImPyImPy- β -Py
	2031 β) 5'-W G T G C C G W-3'	Im- β -ImPyPyIm- γ -PyImImPy- β -Py
35	2032 β) 5'-W G T G C C C W-3'	Im- β -ImPyPyPy- γ -ImImImPy- β -Py

TABLE 174: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGTWNNW-3'

	DNA sequence	aromatic amino acid sequence
	2033 β) 5'-W G T T T T W-3'	ImHp- β -HpHpHp- γ -PyPyPy- β -PyPy
5	2034 β) 5'-W G T T T T A W-3'	ImHp- β -HpHpPy- γ -HpPyPy- β -PyPy
	2035 β) 5'-W G T T T T G W-3'	ImHp- β -HpHpIm- γ -PyPyPy- β -PyPy
	2036 β) 5'-W G T T T T C W-3'	ImHp- β -HpHpPy- γ -ImPyPy- β -PyPy
	2037 β) 5'-W G T T T A T W-3'	ImHp- β -HpPyHp- γ -PyHpPy- β -PyPy
	2038 β) 5'-W G T T T A A W-3'	ImHp- β -HpPyPy- γ -HpHpPy- β -PyPy
10	2039 β) 5'-W G T T T A G W-3'	ImHp- β -HpPyIm- γ -PyHpPy- β -PyPy
	2040 β) 5'-W G T T T A C W-3'	ImHp- β -HpPyPy- γ -ImHpPy- β -PyPy
	2041 β) 5'-W G T T T G T W-3'	ImHp- β -HpImHp- γ -PyPyPy- β -PyPy
	2042 β) 5'-W G T T T G A W-3'	ImHp- β -HpImPy- γ -HpPyPy- β -PyPy
	2043 β) 5'-W G T T T G G W-3'	ImHp- β -HpImIm- γ -PyPyPy- β -PyPy
15	2044 β) 5'-W G T T T G C W-3'	ImHp- β -HpImPy- γ -ImPyPy- β -PyPy
	2045 β) 5'-W G T T T C T W-3'	ImHp- β -HpPyHp- γ -PyImPy- β -PyPy
	2046 β) 5'-W G T T T C A W-3'	ImHp- β -HpPyPy- γ -HpImPy- β -PyPy
	2047 β) 5'-W G T T T C G W-3'	ImHp- β -HpPyIm- γ -PyImPy- β -PyPy
	2048 β) 5'-W G T T T C C W-3'	ImHp- β -HpPyPy- γ -ImImPy- β -PyPy
20	2049 β) 5'-W G T T A T T W-3'	ImHp- β -PyHpHp- γ -PyPyHp- β -PyPy
	2050 β) 5'-W G T T A T A W-3'	ImHp- β -PyHpPy- γ -HpPyHp- β -PyPy
	2051 β) 5'-W G T T A T G W-3'	ImHp- β -PyHpIm- γ -PyPyHp- β -PyPy
	2052 β) 5'-W G T T A T C W-3'	ImHp- β -PyHpPy- γ -ImPyHp- β -PyPy
	2053 β) 5'-W G T T A A T W-3'	ImHp- β -PyPyHp- γ -PyHpHp- β -PyPy
25	2054 β) 5'-W G T T A A A W-3'	ImHp- β -PyPyPy- γ -HpHpHp- β -PyPy
	2055 β) 5'-W G T T A A G W-3'	ImHp- β -PyPyIm- γ -PyHpHp- β -PyPy
	2056 β) 5'-W G T T A A C W-3'	ImHp- β -PyPyPy- γ -ImHpHp- β -PyPy
	2057 β) 5'-W G T T A G T W-3'	ImHp- β -PyImHp- γ -PyPyHp- β -PyPy
	2058 β) 5'-W G T T A G A W-3'	ImHp- β -PyImPy- γ -HpPyHp- β -PyPy
30	2059 β) 5'-W G T T A G G W-3'	ImHp- β -PyImIm- γ -PyPyHp- β -PyPy
	2060 β) 5'-W G T T A G C W-3'	ImHp- β -PyImPy- γ -ImPyHp- β -PyPy
	2061 β) 5'-W G T T A C T W-3'	ImHp- β -PyPyHp- γ -PyImHp- β -PyPy
	2062 β) 5'-W G T T A C A W-3'	ImHp- β -PyPyPy- γ -HpImHp- β -PyPy
	2063 β) 5'-W G T T A C G W-3'	ImHp- β -PyPyIm- γ -PyImHp- β -PyPy
35	2064 β) 5'-W G T T A C C W-3'	ImHp- β -PyPyPy- γ -ImImHp- β -PyPy

TABLE 175: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGTTSNNW-3'

	DNA sequence	aromatic amino acid sequence
	2065 β) 5'-W G T T G T T W-3'	ImHp- β -ImHpHp- γ -PyPyPy- β -PyPy
5	2066 β) 5'-W G T T G T A W-3'	ImHp- β -ImHpPy- γ -HpPyPy- β -PyPy
	2067 β) 5'-W G T T G T G W-3'	ImHp- β -ImHpIm- γ -PyPyPy- β -PyPy
	2068 β) 5'-W G T T G T C W-3'	ImHp- β -ImHpPy- γ -ImPyPy- β -PyPy
	2069 β) 5'-W G T T G A T W-3'	ImHp- β -ImPyHp- γ -PyHpPy- β -PyPy
	2070 β) 5'-W G T T G A A W-3'	ImHp- β -ImPyPy- γ -HpHpPy- β -PyPy
10	2071 β) 5'-W G T T G A G W-3'	ImHp- β -ImPyIm- γ -PyHpPy- β -PyPy
	2072 β) 5'-W G T T G A C W-3'	ImHp- β -ImPyPy- γ -ImHpPy- β -PyPy
	2073 β) 5'-W G T T G G T W-3'	ImHp- β -ImImHp- γ -PyPyPy- β -PyPy
	2074 β) 5'-W G T T G G A W-3'	ImHp- β -ImImPy- γ -HpPyPy- β -PyPy
	2075 β) 5'-W G T T G C T W-3'	ImHp- β -ImPyHp- γ -PyImPy- β -PyPy
	2076 β) 5'-W G T T G C A W-3'	ImHp- β -ImPyPy- γ -HpImPy- β -PyPy
	2077 β) 5'-W G T T G G G W-3'	ImHp- β -ImImIm- γ -PyPyPy- β -PyPy
	2078 β) 5'-W G T T G G C W-3'	ImHp- β -ImImPy- γ -ImPyPy- β -PyPy
	2079 β) 5'-W G T T G C G W-3'	ImHp- β -ImPyIm- γ -PyImPy- β -PyPy
	2080 β) 5'-W G T T G C C W-3'	ImHp- β -ImPyPy- γ -ImImPy- β -PyPy
	2081 β) 5'-W G T T C T T W-3'	ImHp- β -PyHpHp- γ -PyPyIm- β -PyPy
	2082 β) 5'-W G T T C T A W-3'	ImHp- β -PyHpPy- γ -HpPyIm- β -PyPy
	2083 β) 5'-W G T T C T G W-3'	ImHp- β -PyHpIm- γ -PyPyIm- β -PyPy
	2084 β) 5'-W G T T C T C W-3'	ImHp- β -PyHpPy- γ -ImPyIm- β -PyPy
	2085 β) 5'-W G T T C A T W-3'	ImHp- β -PyPyHp- γ -PyHpIm- β -PyPy
25	2086 β) 5'-W G T T C A A W-3'	ImHp- β -PyPyPy- γ -HpHpIm- β -PyPy
	2087 β) 5'-W G T T C A G W-3'	ImHp- β -PyPyIm- γ -PyHpIm- β -PyPy
	2088 β) 5'-W G T T C A C W-3'	ImHp- β -PyPyPy- γ -ImHpIm- β -PyPy
	2089 β) 5'-W G T T C G T W-3'	ImHp- β -PyImHp- γ -PyPyIm- β -PyPy
	2090 β) 5'-W G T T C G A W-3'	ImHp- β -PyImPy- γ -HpPyIm- β -PyPy
30	2091 β) 5'-W G T T C C T W-3'	ImHp- β -PyPyHp- γ -PyImIm- β -PyPy
	2092 β) 5'-W G T T C C A W-3'	ImHp- β -PyPyPy- γ -HpImIm- β -PyPy
	2093 β) 5'-W G T T C G G W-3'	ImHp- β -PyImIm- γ -PyPyIm- β -PyPy
	2094 β) 5'-W G T T C G C W-3'	ImHp- β -PyImPy- γ -ImPyIm- β -PyPy
	2095 β) 5'-W G T T C C G W-3'	ImHp- β -PyPyIm- γ -PyImIm- β -PyPy
35	2096 β) 5'-W G T T C C C W-3'	ImHp- β -PyPyPy- γ -ImImIm- β -PyPy

TABLE 176: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGTAWNNW-3'

	DNA sequence	aromatic amino acid sequence
	2097 β) 5'-W G T A T T T W-3'	ImHp- β -HpHpHp- γ -PyPyPy- β -PyPy
5	2098 β) 5'-W G T A T T A W-3'	ImHp- β -HpHpPy- γ -HpPyPy- β -PyPy
	2099 β) 5'-W G T A T T G W-3'	ImHp- β -HpHpIm- γ -PyPyPy- β -PyPy
	2100 β) 5'-W G T A T T C W-3'	ImHp- β -HpHpPy- γ -ImPyPy- β -PyPy
	2101 β) 5'-W G T A T A T W-3'	ImHp- β -HpPyHp- γ -PyHpPy- β -PyPy
	2102 β) 5'-W G T A T A A W-3'	ImHp- β -HpPyPy- γ -HpHpPy- β -PyPy
10	2103 β) 5'-W G T A T A G W-3'	ImHp- β -HpPyIm- γ -PyHpPy- β -PyPy
	2104 β) 5'-W G T A T A C W-3'	ImHp- β -HpPyPy- γ -ImHpPy- β -PyPy
	2105 β) 5'-W G T A T G T W-3'	ImHp- β -HpImHp- γ -PyPyPy- β -PyPy
	2106 β) 5'-W G T A T G A W-3'	ImHp- β -HpImPy- γ -HpPyPy- β -PyPy
	2107 β) 5'-W G T A T G G W-3'	ImHp- β -HpImIm- γ -PyPyPy- β -PyPy
	2108 β) 5'-W G T A T G C W-3'	ImHp- β -HpImPy- γ -ImPyPy- β -PyPy
	2109 β) 5'-W G T A T C T W-3'	ImHp- β -HpPyHp- γ -PyImPy- β -PyPy
	2110 β) 5'-W G T A T C A W-3'	ImHp- β -HpPyPy- γ -HpImPy- β -PyPy
	2111 β) 5'-W G T A T C G W-3'	ImHp- β -HpPyIm- γ -PyImPy- β -PyPy
	2112 β) 5'-W G T A T C C W-3'	ImHp- β -HpPyPy- γ -ImImPy- β -PyPy
	2113 β) 5'-W G T A A T T W-3'	ImHp- β -PyHpHp- γ -PyPyHp- β -PyPy
	2114 β) 5'-W G T A A T A W-3'	ImHp- β -PyHpPy- γ -HpPyHp- β -PyPy
	2115 β) 5'-W G T A A T G W-3'	ImHp- β -PyHpIm- γ -PyPyHp- β -PyPy
	2116 β) 5'-W G T A A T C W-3'	ImHp- β -PyHpPy- γ -ImPyHp- β -PyPy
	2117 β) 5'-W G T A A A T W-3'	ImHp- β -PyPyHp- γ -PyHpHp- β -PyPy
25	2118 β) 5'-W G T A A A A W-3'	ImHp- β -PyPyPy- γ -HpHpHp- β -PyPy
	2119 β) 5'-W G T A A A G W-3'	ImHp- β -PyPyIm- γ -PyHpHp- β -PyPy
	2120 β) 5'-W G T A A A C W-3'	ImHp- β -PyPyPy- γ -ImHpHp- β -PyPy
	2121 β) 5'-W G T A A G T W-3'	ImHp- β -PyImHp- γ -PyPyHp- β -PyPy
	2122 β) 5'-W G T A A G A W-3'	ImHp- β -PyImPy- γ -HpPyHp- β -PyPy
30	2123 β) 5'-W G T A A G G W-3'	ImHp- β -PyImIm- γ -PyPyHp- β -PyPy
	2124 β) 5'-W G T A A G C W-3'	ImHp- β -PyImPy- γ -ImPyHp- β -PyPy
	2125 β) 5'-W G T A A C T W-3'	ImHpPyPyPyHp- γ -PyImHp- β -PyPy
	2126 β) 5'-W G T A A C A W-3'	ImHpPyPyPyPy- γ -HpImHp- β -PyPy
	2127 β) 5'-W G T A A C G W-3'	ImHpPyPyPyIm- γ -PyImHp- β -PyPy
35	2128 β) 5'-W G T A A C C W-3'	ImHpPyPyPyPy- γ -ImImHp- β -PyPy

TABLE 177: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGTASNNW-3'

	DNA sequence	aromatic amino acid sequence
	2129 β) 5'-W G T A G T T W-3'	ImHp- β -ImHpHp- γ -PyPyPy- β -PyPy
5	2130 β) 5'-W G T A G T A W-3'	ImHp- β -ImHpPy- γ -HpPyPy- β -PyPy
	2131 β) 5'-W G T A G T G W-3'	ImHp- β -ImHpIm- γ -PyPyPy- β -PyPy
	2132 β) 5'-W G T A G T C W-3'	ImHp- β -ImHpPy- γ -ImPyPy- β -PyPy
	2133 β) 5'-W G T A G A T W-3'	ImHp- β -ImPyHp- γ -PyHpPy- β -PyPy
	2134 β) 5'-W G T A G A A W-3'	ImHp- β -ImPyPy- γ -HpHpPy- β -PyPy
10	2135 β) 5'-W G T A G A G W-3'	ImHp- β -ImPyIm- γ -PyHpPy- β -PyPy
	2136 β) 5'-W G T A G A C W-3'	ImHp- β -ImPyPy- γ -ImHpPy- β -PyPy
	2137 β) 5'-W G T A G G T W-3'	ImHp- β -ImImHp- γ -PyPyPy- β -PyPy
	2138 β) 5'-W G T A G G A W-3'	ImHp- β -ImImPy- γ -HpPyPy- β -PyPy
	2139 β) 5'-W G T A G C T W-3'	ImHp- β -ImPyHp- γ -PyImPy- β -PyPy
	2140 β) 5'-W G T A G C A W-3'	ImHp- β -ImPyPy- γ -HpImPy- β -PyPy
	2141 β) 5'-W G T A G G G W-3'	ImHp- β -ImImIm- γ -PyPyPy- β -PyPy
	2142 β) 5'-W G T A G G C W-3'	ImHp- β -ImImPy- γ -ImPyPy- β -PyPy
	2143 β) 5'-W G T A G C G W-3'	ImHp- β -ImPyIm- γ -PyImPy- β -PyPy
	2144 β) 5'-W G T A G C C W-3'	ImHp- β -ImPyPy- γ -ImImPy- β -PyPy
	2145 β) 5'-W G T A C T T W-3'	ImHp- β -PyHpHp- γ -PyPyIm- β -PyPy
	2146 β) 5'-W G T A C T A W-3'	ImHp- β -PyHpPy- γ -HpPyIm- β -PyPy
	2147 β) 5'-W G T A C T G W-3'	ImHp- β -PyHpIm- γ -PyPyIm- β -PyPy
	2148 β) 5'-W G T A C T C W-3'	ImHp- β -PyHpPy- γ -ImPyIm- β -PyPy
	2149 β) 5'-W G T A C A T W-3'	ImHp- β -PyPyHp- γ -PyHpIm- β -PyPy
25	2150 β) 5'-W G T A C A A W-3'	ImHp- β -PyPyPy- γ -HpHpIm- β -PyPy
	2151 β) 5'-W G T A C A G W-3'	ImHp- β -PyPyIm- γ -PyHpIm- β -PyPy
	2152 β) 5'-W G T A C A C W-3'	ImHp- β -PyPyPy- γ -ImHpIm- β -PyPy
	2153 β) 5'-W G T A C G T W-3'	ImHp- β -PyImHp- γ -PyPyIm- β -PyPy
	2154 β) 5'-W G T A C G A W-3'	ImHp- β -PyImPy- γ -HpPyIm- β -PyPy
30	2155 β) 5'-W G T A C C T W-3'	ImHp- β -PyPyHp- γ -PyImIm- β -PyPy
	2156 β) 5'-W G T A C C A W-3'	ImHp- β -PyPyPy- γ -HpImIm- β -PyPy
	2157 β) 5'-W G T A C G G W-3'	ImHp- β -PyImIm- γ -PyPyIm- β -PyPy
	2158 β) 5'-W G T A C G C W-3'	ImHp- β -PyImPy- γ -ImPyIm- β -PyPy
	2159 β) 5'-W G T A C C G W-3'	ImHp- β -PyPyIm- γ -PyImIm- β -PyPy
35	2150 β) 5'-W G T A C C C W-3'	ImHp- β -PyPyPy- γ -ImImIm- β -PyPy

TABLE 178: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGTCWNNW-3'

	DNA sequence	aromatic amino acid sequence
	2161 β) 5'-W G T C T T T W-3'	ImHpPy- β -HpHp- γ -PyPy- β -ImPyPy
5	2162 β) 5'-W G T C T T A W-3'	ImHpPy- β -HpPy- γ -HpPy- β -ImPyPy
	2163 β) 5'-W G T C T T G W-3'	ImHpPy- β -HpIm- γ -PyPy- β -ImPyPy
	2164 β) 5'-W G T C T T C W-3'	ImHpPy- β -HpPy- γ -ImPy- β -ImPyPy
	2165 β) 5'-W G T C T A T W-3'	ImHpPy- β -PyHp- γ -PyHp- β -ImPyPy
	2166 β) 5'-W G T C T A A W-3'	ImHpPy- β -PyPy- γ -HpHp- β -ImPyPy
10	2167 β) 5'-W G T C T A G W-3'	ImHpPy- β -PyIm- γ -PyHp- β -ImPyPy
	2168 β) 5'-W G T C T A C W-3'	ImHpPy- β -PyPy- γ -ImHp- β -ImPyPy
	2169 β) 5'-W G T C T G T W-3'	ImHpPy- β -ImHp- γ -PyPy- β -ImPyPy
	2170 β) 5'-W G T C T G A W-3'	ImHpPy- β -ImPy- γ -HpPy- β -ImPyPy
	2171 β) 5'-W G T C T G G W-3'	ImHpPy- β -ImIm- γ -PyPy- β -ImPyPy
15	2172 β) 5'-W G T C T G C W-3'	ImHpPy- β -ImPy- γ -ImPy- β -ImPyPy
	2173 β) 5'-W G T C T C T W-3'	ImHpPy- β -PyHp- γ -PyIm- β -ImPyPy
	2174 β) 5'-W G T C T C A W-3'	ImHpPy- β -PyPy- γ -HpIm- β -ImPyPy
	2175 β) 5'-W G T C T C G W-3'	ImHpPy- β -PyIm- γ -PyIm- β -ImPyPy
	2176 β) 5'-W G T C T C C W-3'	ImHpPy- β -PyPy- γ -ImIm- β -ImPyPy
20	2177 β) 5'-W G T C A T T W-3'	ImHpPy- β -HpHp- γ -PyPy- β -ImPyPy
	2178 β) 5'-W G T C A T A W-3'	ImHpPy- β -HpPy- γ -HpPy- β -ImPyPy
	2179 β) 5'-W G T C A T G W-3'	ImHpPy- β -HpIm- γ -PyPy- β -ImPyPy
	2180 β) 5'-W G T C A T C W-3'	ImHpPy- β -HpPy- γ -ImPy- β -ImPyPy
	2181 β) 5'-W G T C A A T W-3'	ImHpPy- β -PyHp- γ -PyHp- β -ImPyPy
25	2182 β) 5'-W G T C A A A W-3'	ImHpPy- β -PyPy- γ -HpHp- β -ImPyPy
	2183 β) 5'-W G T C A A G W-3'	ImHpPy- β -PyIm- γ -PyHp- β -ImPyPy
	2184 β) 5'-W G T C A A C W-3'	ImHpPy- β -PyPy- γ -ImHp- β -ImPyPy
	2185 β) 5'-W G T C A G T W-3'	ImHpPy- β -ImHp- γ -PyPy- β -ImPyPy
	2186 β) 5'-W G T C A G A W-3'	ImHpPy- β -ImPy- γ -HpPy- β -ImPyPy
30	2187 β) 5'-W G T C A G G W-3'	ImHpPy- β -ImIm- γ -PyPy- β -ImPyPy
	2188 β) 5'-W G T C A G C W-3'	ImHpPy- β -ImPy- γ -ImPy- β -ImPyPy
	2189 β) 5'-W G T C A C T W-3'	ImHpPy- β -PyHp- γ -PyIm- β -ImPyPy
	2190 β) 5'-W G T C A C A W-3'	ImHpPy- β -PyPy- γ -HpIm- β -ImPyPy
	2191 β) 5'-W G T C A C G W-3'	ImHpPy- β -PyIm- γ -PyIm- β -ImPyPy
35	2192 β) 5'-W G T C A C C W-3'	ImHpPy- β -PyPy- γ -ImIm- β -ImPyPy

TABLE 179: 12-ring β -Hairpin Polyamides for recognition of 8-bp 5'-WGTCNNW-3'

	DNA sequence	aromatic amino acid sequence
	2193 β) 5'-W G T C G T T W-3'	ImHp- β -ImHpHp- γ -PyPy- β -ImPyPy
5	2194 β) 5'-W G T C G T A W-3'	ImHp- β -ImHpPy- γ -HpPy- β -ImPyPy
	2195 β) 5'-W G T C G T G W-3'	ImHp- β -ImHpIm- γ -PyPy- β -ImPyPy
	2196 β) 5'-W G T C G T C W-3'	ImHp- β -ImHpPy- γ -ImPy- β -ImPyPy
	2197 β) 5'-W G T C G A T W-3'	ImHp- β -ImPyHp- γ -PyHp- β -ImPyPy
	2198 β) 5'-W G T C G A A W-3'	ImHp- β -ImPyPy- γ -HpHp- β -ImPyPy
10	2199 β) 5'-W G T C G A G W-3'	ImHp- β -ImPyIm- γ -PyHp- β -ImPyPy
	2200 β) 5'-W G T C G A C W-3'	ImHp- β -ImPyPy- γ -ImHp- β -ImPyPy
	2201 β) 5'-W G T C G G T W-3'	ImHp- β -ImImHp- γ -PyPy- β -ImPyPy
	2202 β) 5'-W G T C G G A W-3'	ImHp- β -ImImPy- γ -HpPy- β -ImPyPy
	2203 β) 5'-W G T C G C T W-3'	ImHp- β -ImPyHp- γ -PyIm- β -ImPyPy
15	2204 β) 5'-W G T C G C A W-3'	ImHp- β -ImPyPy- γ -HpIm- β -ImPyPy
	2205 β) 5'-W G T C C T T W-3'	ImHp- β -PyHpHp- γ -Py- β -ImImPyPy
	2206 β) 5'-W G T C C T A W-3'	ImHp- β -PyHpPy- γ -Hp- β -ImImPyPy
	2207 β) 5'-W G T C C T G W-3'	ImHp- β -PyHpIm- γ -Py- β -ImImPyPy
	2208 β) 5'-W G T C C T C W-3'	ImHp- β -PyHpPy- γ -Im- β -ImImPyPy
20	2209 β) 5'-W G T C C A T W-3'	ImHp- β -PyPyHp- γ -Py- β -ImImPyPy
	2210 β) 5'-W G T C C A A W-3'	ImHp- β -PyPyPy- γ -Hp- β -ImImPyPy
	2211 β) 5'-W G T C C A G W-3'	ImHp- β -PyPyIm- γ -Py- β -ImImPyPy
	2212 β) 5'-W G T C C A C W-3'	ImHp- β -PyPyPy- γ -Im- β -ImImPyPy
	2213 β) 5'-W G T C C G T W-3'	ImHp- β -PyImHp- γ -Py- β -ImImPyPy
25	2214 β) 5'-W G T C C G A W-3'	ImHp- β -PyImPy- γ -Hp- β -ImImPyPy
	2215 β) 5'-W G T C C C T W-3'	ImHp- β -PyPyHp- γ -PyImImIm- β -Py
	2216 β) 5'-W G T C C C A W-3'	ImHp- β -PyPyPy- γ -HpImImIm- β -Py
	2217 β) 5'-W G T C G G G W-3'	ImHp- β -ImImIm- γ -PyPy- β -ImPyPy
	2218 β) 5'-W G T C G G C W-3'	ImHp- β -ImImPy- γ -ImPy- β -ImPyPy
30	2219 β) 5'-W G T C G C G W-3'	ImHp- β -ImPyIm- γ -PyIm- β -ImPyPy
	2220 β) 5'-W G T C G C C W-3'	ImHp- β -ImPyPy- γ -ImIm- β -ImPyPy
	2221 β) 5'-W G T C C G G W-3'	ImHp- β -PyImIm- γ -Py- β -ImImPyPy
	2222 β) 5'-W G T C C G C W-3'	ImHp- β -PyImPy- γ -Im- β -ImImPyPy
	2223 β) 5'-W G T C C C G W-3'	ImHp- β -PyPyIm- γ -PyImImIm- β -Py
35	2224 β) 5'-W G T C C C C W-3'	ImHp- β -PyPyPy- γ -ImImImIm- β -Py